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RAILWAY AGE

American Democracy on Trial

The demagogy and stupidity that have been shown for months by a majority of the members of both houses of Congress in dealing with taxation and government expenditures have done almost measureless harm to the people of the United States. The total volume of the country's business declined less than 40 per cent between January 1, 1929, and January 1, 1932. It declined 25 per cent in the mere five months from January 1, 1932, to June 1, 1932, while Congress was fumbling with economic problems of vital importance. Between March 8 and May 28, 1932, the average price of industrial stocks on the New York Stock Exchange declined almost 50 per cent, and the average price of railroad stocks 60 per cent.

A half-dozen men of economic intelligence and courage could have, in the first month after Congress met in December, worked out policies which, if adopted by the government, would have prevented this serious decline of business, with its resulting increase of unemployment, destruction of values, and further loss of public confidence. The tax bill that has been passed by Congress is an economic monstrosity, but if Congress, after all its display of demagogy and fumbling, will now adopt legislation to reduce government expenditures enough to balance the federal budget and go home, there probably will begin immediately some revival of confidence and improvement in business.

"We, the People," Are Responsible

While Congress has been spouting and fumbling the people have been damning it for everything it has done and not done. The spectacle has resembled that of a monkey throwing brickbats at a mirror because his own reflection does not please him. Our representatives and senators were elected by those who voted for them, aided by that majority of the qualified voters who were too lazy and indifferent to vote at all. The matter with Congress is that it is a faithful reflection of the short-sighted greed, economic illiteracy, prejudice against men of expert knowledge and ability, and unwillingness to perform the duties of citizenship which have characterized for years a majority of every class of our people—working men, farmers and business men.

Why were almost 35,000 people killed and more than one million injured last year on our highways? Why are murders and all other crimes of violence more prevalent in the United States than in any other civilized country? Why have criminals, with reputations so great that their names appear in the press more frequently than those of leading citizens, got a large part of the business in every important center of population by the throat and a large part of its people terrorized? Because, in our great democracy, there are so few who are disposed to help elect the right kind of men to public office, get the right kind of laws passed, and then help get those laws enforced.

Why are the railroads in the worst condition of any large industry in the country, and in imperative need of government loans to save them from becoming insolvent and dragging down the trust companies, savings banks and life insurance companies that own their bonds? Because for more than 25 years working men, farmers and business men have refused to listen to those who have known something about the railroad business, and, for their own selfish purposes, have persisted in having it dealt with in ways contrary to every sound principle of public policy and economics.

Raiding the Public Treasury

Why, in the midst of the most tragic economic crisis in history, when there is universal outcry for reductions of government expenditures, have many members of Congress joined with Speaker Garner in supporting, as a pretended means of reviving prosperity and increasing employment, the most atrocious bill for the distribution of pork in every state and almost every Congressional district that was ever introduced? Because for 50 years it has been the practice of the American electorate to send men to Washington to raid the public treasury and bring back home subsidies in the form of appropriations for needlessly expensive public buildings, for waterways that could hardly float a skiff, for highways for the construction of which there was no economic justification, for extravagant bonuses and pensions, and for crazy forms of so-called "farm relief". Having found for years that their success in getting and staying in Congress depended upon their proficiency in raiding

the public treasury, is it surprising that members of Congress should have become confused and begun to fumble when confronted suddenly with a general outcry for reduction of government expenditures? The American people, and every class of them, are primarily responsible for the enormous increases of government expenditures and taxes that have occurred. The politicians are guilty only of having foolishly and recklessly made effective the people's folly.

The Crisis of 1896 and 1932

The crisis of 1932 recalls the crisis of 1896, which also occurred after the people had passed through almost three years of profound depression and acute suffering. Then, as now, numerous quacks proposed policies to save the country the adoption of which would have completed its economic ruin. Then, as now, both political parties had opportunity to advocate sound policies. The Democrats threw away their opportunity in 1896, as they have been doing in 1932. They declared for free silver and nominating for president the amiable Mr. Bryan, who had facility of speech and the economic ideas of a Hottentot, while there appeared as leaders in the Republican party men of ability who succeeded at the crucial time in committing it to a policy of sound money. Are the Democrats fatuous enough to let history continue to repeat itself? Mr. Hoover and those who have been battling with him to balance the budget by sound and equitable taxation and by rigorous reduction of government expenditures recently have been playing roles similar to those played by the men of brains and strength in the Republican party in 1896. Will such men accomplish as much in 1932 as they did in 1896?

The result in 1896 was that Bryan was overwhelmingly defeated, that a policy of sound money was firmly established, and that immediately there began a revival of business which resulted in the greatest period of real prosperity this country has ever experienced. There is no better single measure of the total volume of business done than the amount of freight traffic handled by the railways, and railway freight business increased in every year during the ten consecutive years ending with 1907, the total increase during this ten year period being 150 per cent. The number of tons carried one mile in the year ended June 30, 1897, was 95 billion, and in the year ended June 30, 1907, it was 237 billion. The number of employees of the railways increased from 823,500 in 1897 to 1,672,074 in 1907, or more than 100 per cent. There were corresponding increases in activity and in employment in all lines of business. An equal revolution in present economic conditions can be worked now by the triumph of wise policies in government.

Americans Could Read Then

Why did the American people pass, as they did, through the crisis of 1896 into the period of greatest prosperity that they have ever experienced? They did so because almost every voter—working man, farmer or business man—really studied and discussed the money question and went actively into politics. The advocates of free silver contended then, as many do now, that business could not be revived without inflation of the currency to increase prices and to reduce the obligations of debtors to their creditors. Millions of copies of pamphlets arguing this question pro and con were bought and eagerly read. Crowds gathered daily on corners in villages, towns and cities to argue and listen to arguments, and by devouring newspaper articles and pamphlets, debating among themselves and gathering in great throngs to listen to speakers, the people educated themselves and restored prosperity by voting right.

The people had to decide the paramount issue of the political campaign of 1896. Nobody else could decide it for them. They must decide in 1932 upon the great economic questions that are now presented. Nobody else can decide for them. They had to make in 1896 the decision necessary to restore prosperity. Nobody else could do it. They will have to make in 1932 the decisions necessary to restore prosperity. Nobody else can do it.

The generation of 1896 did not have thousands of talkie shows to go to, or 26,000,000 automobiles in which to joy ride, and contract bridge had not been invented. Can the present generation eschew seeing virtue triumph and villainy discomfited in the talkies, and forego bickering over contract, long enough to do a little reading and thinking about problems of government and economics that involve the nation's future for years? Their fathers burned the midnight oil to learn enough to settle right the paramount issue of 1896. Can the present generation reduce its burning of gasoline enough to solve the problems of 1932, or will it go on joy-riding ignorantly to ruin as it has been for three years until it will have nothing left with which to pay for gasoline or talkie tickets?

Let's Quit Being Hypocrites

Will we elect next fall blatherskites and fatheads whose promises will be in inverse ratio to the amount of brains they have, or will we elect men of ability and courage who will stand up and fight for balanced government budgets, equitable and reduced taxation, wholesale reductions of government expenditures, and fair and constructive dealings of government with business, all of which are essential to the restoration of confidence, the revival of general business and an increase of employment?

Let us quit being hypocrites, admit our own responsibility for present conditions and assume our full responsibility for changing them. Politicians are not solely responsible for present conditions as respects crime, or the government expenditures and taxation that are dragging the nation down. Workingmen,

farmers, business men—every man and woman in the United States, for women now also vote—are responsible for them, because they are due to the short-sighted greed, economic illiteracy and civic sloth and imbecility we have shown for years in dealing with our great problems of government and business. If we are to solve these problems those of us who are now fortunate enough to have work to do cannot merely do that work in a routine way and then go joy-riding, but, whether we are employed or not, we must study and think, and then act and vote with the intelligence and patriotism of citizens of a great commonwealth.

Never was American democracy on trial as it is now. Never did it so far fail to meet the test as it has during the last decade of both prosperity and depression while it has been trying to get rich, and later trying to escape ruin, by greedily and stupidly disregarding every sound principle of government and economics. We will have a revival of prosperity such as occurred following the election of 1896 if and when the American people show they have as much staunchness and brains as they showed in 1896, and we will not have it or deserve it before.

Time To Develop a Motive Power Policy

The railroads have entered a new era in which the forces that formerly controlled the purchase of new motive power have been practically eliminated, but in which the need for a constant accession of locomotives of the most modern types is greater than ever before.

Prior to the war the constantly increasing rate of growth of traffic created a demand for more aggregate tractive force and more locomotive units. This demand had to be satisfied to keep the railroads in step with the growth of commerce and industry. During the years which have elapsed since the close of the war the effect of forces tending to retard the rates of growth of industries has been clearly evident in the leveling-off of the curve of freight-traffic increase. The volume of passenger traffic has suffered a heavy decline.

These changes have removed the pressure which automatically kept the locomotive inventory of the railroads in step with advances in the art of locomotive design and proportioning. With no need for more tractive force, the motive-power problem has ceased to command the attention of the executive.

During this same period developments have been in process which make impracticable the continuance of operation with the motive power now available. In carrying out the campaign of improved public service which the railroads aggressively undertook in 1923, there has been a steady stepping up of average freight-train speed, first effected by improvements in roadway and yard facilities and in operating methods to eliminate delays, and then by increases in running speeds. The term "drag freight", which described the trains in which a large proportion of the country's traffic was moved before the war, is now practically eliminated from the railroad vocabulary. Traffic now moves in time freights, many of which are operated on regular schedules requiring passenger-train speeds.

Parallel with this development has been a remarkable increase in the horsepower capacity of the locomotives, such that modern locomotives can meet this new demand for speed with practically full tonnage and high thermal efficiency, and without the undue increase in maintenance expense which follows attempts to operate the older freight power at high speeds.

In the meantime the railroad industry has become conscious of a new factor which never before had to be taken into account; that is, the growing competition for the business of the railroads by motor trucks on the highways. This is requiring the development of a new degree of flexibility of operation in which speed plays an important part.

It is essential, therefore, that attention be given to the development of a definite motive-power policy and program, if progress in railway transportation is not to cease.

The foundation of future motive-power policies must be the prevention of the losses from cumulative obsolescence. These losses arise, not only from high operating costs of inefficient motive power, but also from the loss of business from ineffective service. With less than 20 per cent of the motive-power units on American railroads ten years old or under, it would seem that, as a matter of policy, some 80 per cent of the locomotives, considering the railroads as a whole, should be placed on the defensive. It should be made a definite assignment of the motive-power department to place all such locomotives on trial and, based on the findings, to develop, say, a five-year program for the elimination of obsolescence in the order of its effect on the rate of investment return and on the competitive strength of railroad transportation. By no means all of the locomotives over ten years old will prove to be obsolete, but some obsolescence will be found in every group over that age, and some of the greatest losses may be found among the groups youngest in years.

While such a program may be based on a depreciation rate, established as a part of the policy, the automatic application of such a rate will not alone be sufficient. The development of a continuous five-year program will keep the motive-power inventory under constant study and permit the railroads intelligently to take quick advantage of specific developments as they occur.

An Unbiased View on Highway Taxation

Supporting every step in the advance of his thesis upon a firm foundation of economic fact and history, Professor Shorey Peterson of the University of Michigan has, in the May issue of the Quarterly Journal of Economics,* outlined unanswerably the case for placing highway policy on a commercial, self-supporting basis. It is doubtful whether there is a more troublesome or a more pressing problem in current economics than this one and it is heartening to see the claims of those who have been discussing it pro and con weighed at last in the balance of unbiased and detached scholarship. Those who have in a general way upheld the views on this question which have been set forth in these columns will be gratified to learn to what an extent such views are supported in Professor Peterson's analysis. Such considerations aside, however, the article without doubt marks the greatest step yet taken toward stripping this question free of propaganda, a step which should arouse the gratitude of all serious students of the subject.

Professor Peterson quickly explodes the view of the "King's Highway", which some motor transport supporters have been endeavoring to popularize, i.e., that the use of the roads as they see fit is an inherent right of all citizens. He points out that in the days when this concept held sway the "King's Highway" was little more than a right to traverse an unimproved footpath. When commercial traffic developed restrictions were adopted and toll roads developed and, until the advent of the railway, it was over these toll roads that the bulk of traffic passed. Toll roads fell into the discard when through traffic deserted them for the railways and the highway became solely an instrument of local transportation. Now, of course, a new situation has arisen which requires a new policy to meet its exigencies. Motor transport interests, zealous for their conception of the King's Highway", may not like to be reminded, as Professor Peterson reminds them, that in 1661 a British law was passed "which, because of the danger to existing roads, prohibited the operation of four-wheeled vehicles."

Professor Peterson analyzes in some detail the contention of highway promoters that real estate owners and others should share in their costs in proportion to the benefits such construction confers upon them. "This is equivalent to maintaining, as to the movement of a bushel of wheat by rail," he says, "that the railroad should not in the first instance bear the costs involved, nor should they fall upon the consignee, but that the movement, being obviously beneficial to farmer, miller, baker and consumer, should be financed through payments by them all, and moreover, that the general public, being something apart from the consumer, and living more cheaply than if the railroad were not there, should also contribute directly."

"The influence of improved roads (on land values)," he points out also, "has been stressed inordinately; outstanding instances of appreciation in value have given rise to generalizations of quite improbable validity. Along with a disposition to exaggerate there has been a failure to realize that road improvement may only shift, but not increase the demand for land, that early advantages may disappear when good roads become general, and that savings in production costs may go entirely to consumers." The cogency of this reasoning ought to be easy of comprehension to present-day farmers who are trying to pay taxes for highways they did not need from the income of land worth far less than it was before the roads were built.

The value of road expenditures as an attraction to tourist traffic is also accorded some much-needed analysis. Tourist traffic may be a net gain to some one locality, but, nationally considered, it simply means spending money in a different place. If the tourist buys his groceries at a wayside stand, the owner of that establishment may benefit, but not so his home grocer; the national wealth has not been increased.

Space does not permit mention of even the major points of Professor Peterson's study—nor should it be necessary to touch upon all of them here, since really serious students of this important problem will wish to read the entire article. The thesis ends with a mention of the "log-rolling approach to economic matters, commonly exemplified in federal rivers-and-harbors legislation" as something to be eschewed, and the expression of the thought that "with the beginning already made in the highway field, a still more extensive application of the commercial conception of road administration will furnish useful practice and experience."

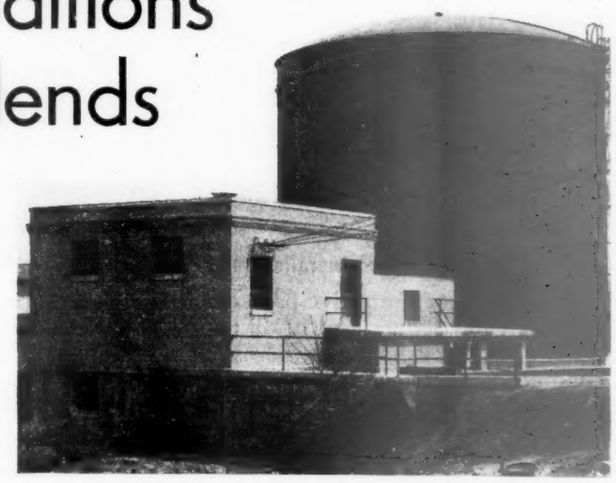
* Published by the Harvard University Press, Cambridge, Mass.

Smoke Abatement

The railroads of northern New Jersey have cooperated to excellent advantage with the authorities of Hudson county in the smoke abatement campaign which was described in the *Railway Age* of June 4. Black smoke from locomotives and enginehouses irritates the public and stimulates needless criticism—and the railroads need boosters, not critics. But there is another and equally important side to the picture. When the chief operating officer of one of the railroads was approached by members of the advisory board, he listened to their comments and then said in a forceful manner: "If you can show us how to eliminate black smoke it will mean so much to us in reduced expenditures for fuel that we can afford to go the limit in co-operating with you." The experience of the past year, with a friendly and constructive interest on the part of the railroads, has shown that real and substantial progress can be made in smoke abatement. Saving money and at the same time making friends is a combination well worth striving for.

Better Water Conditions Pay Large Dividends

Extensive improvements on B. & O., including over 100 new treating plants and many electric pumping installations, have marked effect on costs and locomotive maintenance

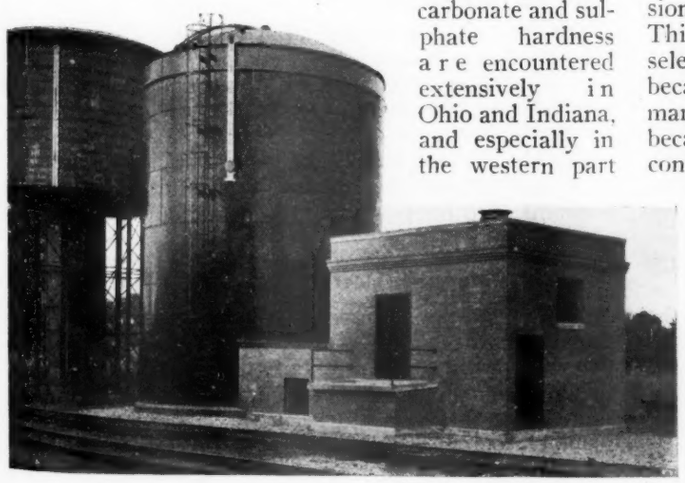


At the Three-Story Treating Plant, Newark, Ohio, the Primary Water Supply Pumps Are Housed in a Sub-Basement Level

THAT the treatment of bad locomotive waters and automatic electric pumping pay, and pay well, has been demonstrated clearly on the Baltimore & Ohio, which, within the last eight years, has completely overhauled its locomotive water supply facilities, including the construction of 113 treating plants and the installation of automatic electric pumping at 58 points. Under normal conditions, approximately 19½ million gallons of water are treated daily on this road, from which it is estimated that approximately 28,700 lb. of incrusting solids and mud are removed. On this basis, it is estimated conservatively that a total saving of more than $1,000,000 is being effected annually through reduced boiler maintenance and improved locomotive performance, on an investment which has amounted to about $3,000,000. On one division of the road, it has been established definitely that the savings effected in a year of normal operations, as the result of the treatment of all bad waters used, except at a few branch line points, exceed by at least one quarter the total capital investment in the treating plants on the division.

Acid and Hard Waters are Encountered

The main water supply problem on the Baltimore & Ohio has been largely that of contending with hard and acid waters. Except for a few sections of the road, such as the Connellsville division and the east end of the Baltimore division, where fairly good natural waters are available, the normal water supplies, while abundant, are either hard or periodically acid in character. Waters containing both carbonate and sulphate hardness are encountered extensively in Ohio and Indiana, and especially in the western part of Ohio where the surface supplies contain from 5 to 25 grains of hardness.



This Treating Plant, Located at Mt. Vernon, Ohio, Is Typical of Many of the Smaller Plants on the B. & O.

The greatest difficulty with acid waters prevails throughout West Virginia and in certain sections of Pennsylvania, particularly in the vicinity of Pittsburgh. This situation is brought about largely by mine drainage. The degree of acidity varies widely with the stage of the water supplies, ranging from slightly alkaline in some cases during periods of heavy rainfall and high water, to as much as 8 or 10 grains of acidity per gallon in periods of drought. At many points, both acidity and hardness are encountered together, and, not infrequently, a considerable amount of silt must be contended with.

Experiments Proved Value of Treatment

Until 1923, locomotive boiler waters on the Baltimore & Ohio had been treated only where the need seemed most urgent, and at that time there were only nine treating plants on the road, although wayside treatment had been introduced at a number of points. In 1923, however, it was decided that the greatest value from treatment could be secured only through treatment on a division or district basis, and with this thought in mind, a definite start was made in equipping the Toledo division which extends from Toledo, Ohio, to Cincinnati. This section of the road, including about 190 miles, was selected for the first complete division installation both because of the hardness of the water encountered at many points, averaging about 15 grains per gallon, and because the locomotives operating over the division were confined strictly within the division limits where they could operate entirely on treated or naturally soft water. One treating plant had been installed on the division in 1922, but by the end of 1924 there were 13 plants in operation, providing for the treatment of all main-line water supplies which were not naturally soft and alkaline in character.

So pronounced were the results of complete treatment on the Toledo division that it was decided to extend treatment over the system, on a division basis. As a matter of fact, it was estimated that as a result of the first year of complete treatment on this division, the entire cost of all of the 13 plants on the division had been more than offset by the savings which had been made

through reduced boiler maintenance and improved locomotive performance.

During the two years immediately following the completion of the treating facilities on the Toledo division, effort was concentrated largely on improving the conditions at a few points of particularly bad water, but at the same time, a carefully prepared program was devised for the complete treatment of the objectionable waters on the other divisions of the road, considering each division largely by itself.

Many Plants Installed, 1927 to 1930

As a result of the active prosecution of this program approximately 90 per cent of all naturally objectionable waters used for boiler purposes on the Baltimore & Ohio are now treated, and to complete the system program for practically 100 per cent treatment calls for the construction of only six more treating plants. That the major part of the program had been completed by the end of 1930 is seen in the fact that with the completion of the work of that year, the road was assured of good boiler water over its main line from Philadelphia, Pa., to Chicago, and from Cumberland, Md., to St. Louis, Mo.

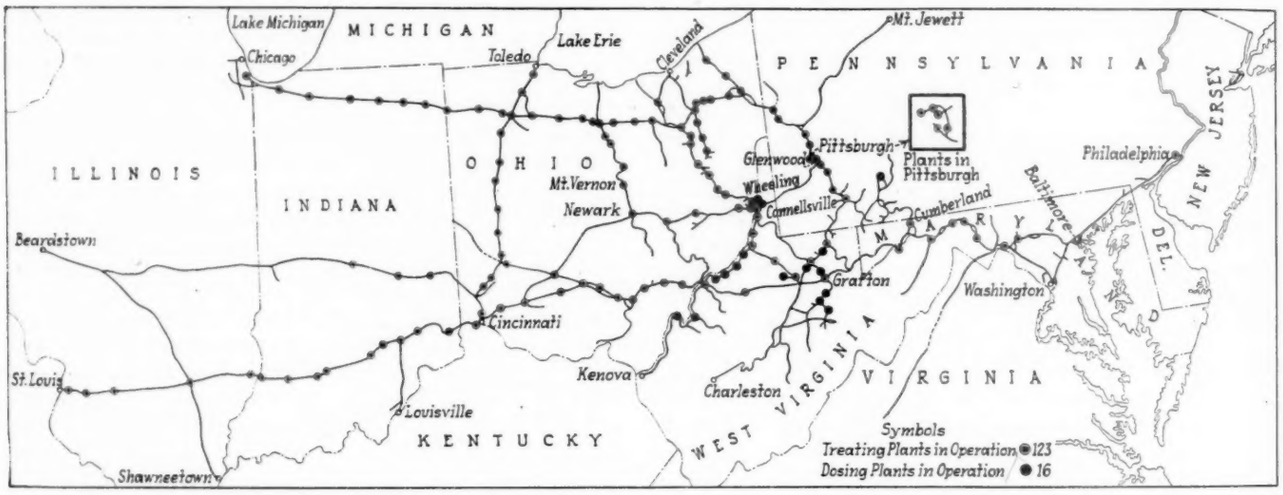
In conjunction with the program of water treatment carried out, which included the provision of wayside treating equipment at a number of branch-line points where permanent treating plants were not justified, practically the entire water facilities of the road were overhauled with the idea of effecting the greatest possible economies. In this work, pumping stations were eliminated where possible; new stations were established to replace two or more existing stations or to obviate the necessity for purchasing water; water service buildings were improved generally, all new buildings being of a permanent, fireproof character; and the pumping equipment was modernized at many points. Anticipating the probability of longer engine runs in the future, with fewer water and coal stops, the program for 1929 and 1930 gave particular attention to the location of water stations and to the character and capacity of the stations built at specific points. That there was a considerable readjustment and consolidation of water points on the road is evidenced by the fact that about 36 water stations were eliminated during the last four or five years.

Altogether, the water service improvements on the Baltimore & Ohio have cost in the neighborhood of $4,000,000. Of this amount approximately 70 to 75 per cent was for treating plants and 25 to 30 per cent was for general improvements to water service buildings and pumping equipment.

The lime-soda method of treating water predominates on the Baltimore & Ohio, it having been found that this method of treatment is highly effective in removing acidity and hardness, and also in removing silt, the three troublesome ingredients in so much of the water on the road. As a matter of fact, of the 123 plants on the system, 115 are of the lime-soda type, while 8 are of the zeolite type. The lime and soda plants, which are mainly of the Graver, American Water Softener and Roberts water-motor designs, are similar in action, varying principally in the method of chemical proportioning and control.

Highly Serviceable Buildings Constructed

With pumping plant buildings already established at most points on the Baltimore & Ohio, most of the work in recent years has been that of constructing treating plant buildings, most of which are of noncombustible materials. Wherever possible, the buildings were constructed with two floors, one at car floor height for the ready handling and storage of chemicals, and the other, usually about 10 ft. lower, for housing the chemical mixing tank, the proportioning equipment and the water-supply piping and valve control systems.



General Map of the B. & O., Showing the Location of Treating Plants and Dosing Stations

At practically all of the treating plants, the building is constructed immediately adjacent to the treating tank, with the lower floor in direct contact with the tank and housing the raw and treated water and sludge piping and valve arrangements in order that they may be within the heated area of the building. At most of the plants the primary supply pumps are housed in separate buildings, but at a few points it was found practical and economical to house them in the same building with the treating equipment.

Automatic Electric Pumping Installed

Along with the large program of water treatment, extensive improvement was made in the pumping facilities at many of the water stations, this phase of the work being designed to minimize pumping costs, and, in a number of instances, to secure a larger or more dependable supply. Prior to 1924, the majority of the pumping plants were steam-operated, although internal combustion engines were in use at a number of points, while in recent years, the trend has been almost entirely

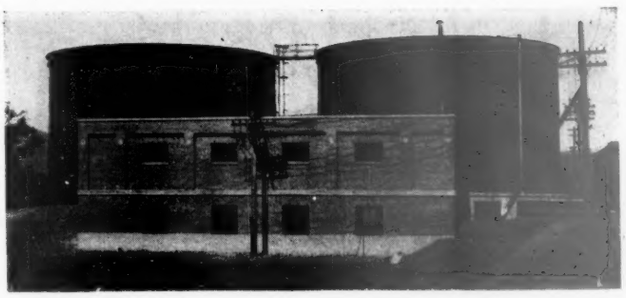
toward the use of motor driven pumping units, principally centrifugal pumps. Going a step further, automatic electric operation has been installed where feasible, 58 such installations, of a total of 72 on the road, having been placed in operation since 1923.

That the savings being effected through this type of operation are large is not questioned on the B. & O., in spite of the fact that pumping cost statistics have never been compiled for the road as a whole. Roughly, the total savings are estimated at about $150,000 a year, but more convincing than this estimate is a comparison of the cost records of individual plants before and after the improved facilities were provided. At a plant at Evitts, (Cumberland) Md., the largest treating plant on the road, where the operating costs prior to the installation of automatic electric pumping equipment were approximately $25,000 annually, they are now only about $9,000. Furthermore, it is known definitely that the present total pumping and treating cost at this plant are well below the cost of pumping the untreated water before the improvements were made.

While there are still a number of pumping and treating plants on the B. & O. which require full-time attendants owing to the type of pumping equipment in use or the constantly varying character of water pumped, the installation of automatic electric pumping combined with treating equipment which is automatic in operation, except for the charging of the chemical vats, has made it possible to put treating plant attendance on a part-time basis at a large number of points. At these plants, the routine work, which consists largely of making periodic tests of the character of the water being pumped and the preparation of chemical charges is usually assigned to a regular employee such as a section foreman or station agent who can give the necessary amount of time each day to treating plant duties either within or after regular working hours.

Large Economies Effected

Detailed statistics have not been compiled on the B. & O. as a whole to show the benefits and economies being derived from the use of treated water, but all evidence and statistics available on treating plant operation and the results being effected point to tangible and intangible benefits of almost unbelievable proportions as, for example, on the Toledo division, as already pointed out. Quite naturally, the most outstanding effect of the general policy of water treatment has been in reduced locomotive boiler maintenance and improved locomotive performance. Whereas it was necessary formerly to wash locomotive boilers over the system on an average of every 10 to 15 days, and on the Toledo division every 7 to 10 days, boiler washing periods over the road generally have been extended to 30 days, and this operation is now carried out in connection with scheduled locomotive inspection as called for under the regulations of the Interstate Commerce Commission. On the Cumberland division alone, under normal conditions, it is estimated that approximately 800 boiler washings are being eliminated each year.

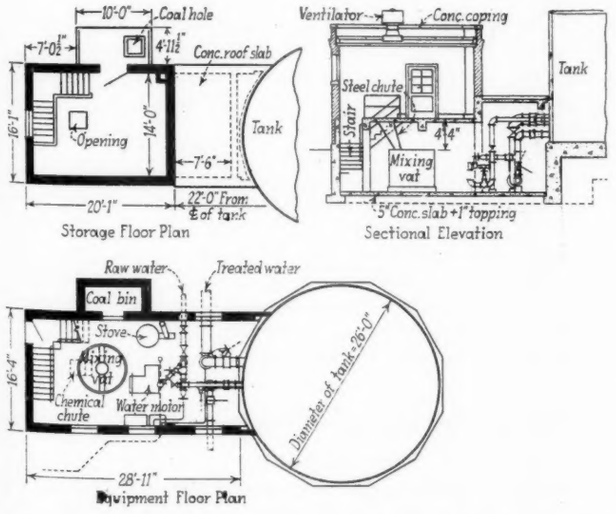


The Twin-Unit Treating Plant at Evitts (Cumberland, Md.) Which Has Capacity for Treating 150,000 Gal. an Hour

The life of boiler flues and side sheets, which was greatly limited prior to the practice of water treatment, owing to acid pitting and the accumulation of scale, has been greatly extended. On the Toledo division, for example, flue life before the treatment of water ranged from about 8 to 13 months and complete new sets of flues were required after about 13 months of service. Since the treatment of water over the division as a whole, the life of flues has been extended to about four years.

In addition to the savings which are being effected in boiler maintenance, there are a number of other factors attributed directly to water treatment, which have resulted in large economies, these including the more intensive utilization of locomotives, longer locomotive runs now possible, and, of no small importance, a reduction in fuel consumption. The saving in fuel, reflecting only that part derived as a result of water treatment, is estimated at from 7 to 10 per cent.

The water service improvements described were planned and carried out under the direction of G. H. Emerson, chief of motive power and equipment; C. P. Van Gundy, engineer of test and water engineer; H. A. Lane, chief engineer; and L. P. Kimball, engineer of buildings. The operation of the plants is carried out under the direction of Earl Stimson, chief engineer maintenance, assisted by J. T. Andrews, assistant engineer, and by Mr. Van Gundy of the motive power department, who has direct supervision over the character and extent of the treatment administered.



Floor Plans and Section Through the Small Treating Plant at Mt. Vernon, Ohio

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"THE CHELTENHAM FLYER," the fastest passenger train ever operated in regular "start-to-stop" service, broke its own speed record on Monday, June 6, according to newspaper dispatches from London. On that day, these accounts state, the Great Western express, with seven coaches weighing 340 tons, covered the 77¼ miles from Swindon to Paddington (London), in 56 minutes, 47 seconds, at an average speed of 81.6 m.p.h. The highest rate reached on the trip, which ordinarily occupies 67 minutes, was 92 m.p.h.

Journal-Packing Reclamation Plant Saves 82 Per Cent

Chicago, Milwaukee, St. Paul & Pacific plant employs modern methods of restoring waste and oil to a high standard of quality

IN the spring of 1931 the Chicago, Milwaukee, St. Paul & Pacific installed a modern centralized reclamation plant at Milwaukee, Wis., at a cost of slightly more than $105,000. During the year ended April 30 nearly a half million pounds of reclaimed packing per month was turned out of the plant with aggregate savings in excess of $87,000 for the year—a return of about 82 per cent on the investment.

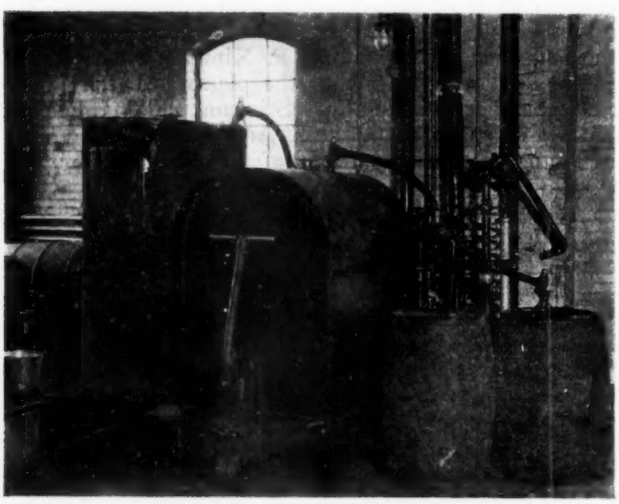
The plant, which is operated by car-department forces, with the co-operation of the stores department in collecting and redistributing packing to regular assigned points on the system, includes the necessary fireproof brick building and oil-storage facilities and packing reclamation machinery and oil distilling equipment furnished by the Journal Box Servicing Corporation, Indianapolis, Ind.

An economical and efficient method of shipping the packing has been developed in conjunction with the stores department, which provides for weekly shipments varying from 300 lb. to Mahant, Iowa, to 22,500 lb. to Minneapolis, Minn. The monthly shipments vary from 50 lb. to Watertown, Wis., to 1,800 lb. to Wausau. The average train haul of these shipments is estimated to be 375 miles from Milwaukee. The days of packing shipments coincide with the stores departments' previously assigned "sailing dates" for other materials from the main distributing point at Milwaukee.

Journal Repacking Work Consolidated

One of the major economies, made possible largely by the installation of the new oil and waste reclamation plant, is the consolidation of repacking work. The C. M. St. P. & P. operates in 15 states with 11,345 miles of track and approximately 74,000 system freight cars, including work equipment.

The former practice provided for repacking boxes at 63 points on the railroad, of which 28 points had renovating facilities. This number has been reduced to nine regularly assigned repacking points, with one central plant at Milwaukee, which meets the packing requirements of the entire system, with the exception of the territory adjacent to Tacoma, Wash. In cases of emergency, individual boxes are repacked at all operating repair points, as in the past.



Types of Oil Containers on Skids and Barrel-Filling Equipment Used

Methods of Reclamation

The former method of reclaiming journal packing on the Milwaukee was similar to that employed by many other roads. Crude pickers and tumbling machines of various types were used to free the waste of dirt, babbitt, short ends, etc., and at some points home-made presses were used to squeeze out the dirty oil from incoming packing. The waste thus cleaned was dumped into soaking vats filled with hot oil, where it was periodically worked with a fork to bring about thorough saturation with the oil, as well as to work out as much as possible of the remaining dirt, after which the waste was placed on drain racks to remove the excess oil. No attempt was made to clean or distill the old oil, with the exception of the use of settling tanks at a few points. As a result, much of the dirty oil found its way into the resaturated packing to which some new oil and new waste had been added. This process was slow and laborious and did not produce a satisfactory quality of reclaimed packing.

Through the efforts of the Mechanical Division Committee on Lubrication, interest was focused on better methods of reclamation which would increase the general efficiency of journal lubrication. The outcome of this renewed interest has been the development of several satisfactory mechanical methods that permit the reclamation of large quantities of packing quickly and economically with a minimum of manual labor. These methods include agitation in a rotating cylinder containing hot oil; forcing clean, hot oil under pressure through the dirty waste; a series of immersions in hot oil followed by extraction in a centrifuge, and alkali washing.

Not only have methods been devised for cleaning the waste more thoroughly, but better methods of purifying the oil have been provided. Centrifuging, chemical treatment and distillation are all used, either alone or in a combination, to produce oil that complies with the A.R.A. requirements. The system adopted by the Milwaukee is the distillation method for the reclamation of oil and an automatic mechanical method for washing the dirty packing in hot oil.

Plant Location and General Method of Operation

The location of the new plant is on a site formerly occupied by a battery of various sizes of oil tanks located in the open for the storage of different kinds of oil. This site was selected as ideal for the handling of materials, since the tracks were so arranged as to facilitate the handling of in and outbound material and at

the same time was close enough to the stores department to permit of making up car loads of reclaimed packing and other material to outside points with the least amount of lost motion.

The waste reclamation building is a 50-ft. by 70-ft. structure, with a large proportion of window area to give good lighting conditions. The basement of the building, also the loading and unloading platforms on either side, are of concrete. The building is fire-proof and, in fact, the entire installation of piping and wiring is designed to make the structure explosion- and vapor-proof.

Table I—Detailed Analysis of the Cost of Operating the Plant and the Savings

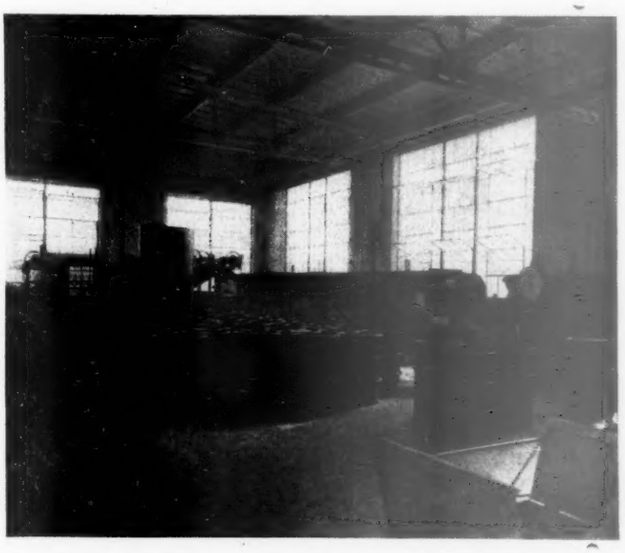
Cost of operating waste-reclamation plant, May 1, 1931, to April 30, 1932:		
Labor	$12,822	
Material, supplies and power-plant expense	26,143	
Store expense:		
Old packing shipped in to renovate 5,774,731 lb. at 1 cent per lb. value	$57,747	
Store expense on old packing at 12 per cent	6,930	
Transportation of old packing shipped to Milwaukee, $5,774,731 lb., average haul 375 miles	1,732	
Transportation of new material and supplies:		
912,588 lb. oil, Kansas City, Mo., to Milwaukee, 513 miles	374	
91,967 lb waste, Chicago to Milwaukee, 85 miles	6	
Total		$48,007
Overhead expense:		
Cost of building, oil-storage tanks, etc.	$50,998	
Machinery	54,815	
Total	$105,813	
Interest, 6 per cent of $105,813	6,349	
Depreciation: 2 per cent of $50,998	1,020	
5 per cent of $54,815	2,741	
Maintenance: 1 per cent of $50,998	510	
5 per cent of $54,815	2,741	
Taxes and insurance, 1 per cent of $105,813	1,058	14,419
Total expense of operating renovating plant		$62,426
Renovated packing turned out		5,518,137 lb.
Cost per 100 lb. of packing turned out		$1.13
Savings in cost of repacking cars:		
Total expense of operating renovating plant		$62,426
Store expense for handling to point of use at 12 per cent		7,491
Transportation of renovated packing to point of use, 5,518,137 lb., average haul 375 miles		1,655
Total cost of 5,518,137 lb.		$71,572
Cost per 100 lb. of renovated packing at point of use		$1.30
Cost of reclaimed packing per car repacked at 72 lb. per car		.94
Cost to repack a car under present method of reclaiming packing:		
Labor, repacking car	$.84	
Cost of reclaimed packing, 72 lb. per car	.94	
Total		$1.78
Cost to repack a car under former method of reclaiming packing:		
Labor, repacking car	$.84	
Cost of reclaimed packing and new oil and packing:		
Labor reclaiming packing	.93	
Steam and electricity	.04	
New oil and waste:		
332,563 lb. fibre packing at 10 cents per lb.	$33,256	
2,679 lb. spring packing at 18 cents per lb.	482	
223,878 gal. car oil at 13 cents per gal.	29,104	
Store expense, 12 per cent	7,541	
Transportation: 335,242 lb. packing and 223,878 gal. oil, or 1,679,085 lb. 1,007.16 tons average haul 568 miles	915	
Total	$71,298	
Total cars repacked	62,565	
Cost per car	1.14	
Total		$2.95
Savings per car repacked due to new reclamation plant		$1.17
Annual savings:		
72,535 cars repacked during year ended April 30, 1932		
Annual savings on repacked cars 72,535 times $1.17		$84,866
Savings in oils purchased in tank-car lots instead of drums:		
13,426 gal. locomotive journal oil at 1 cent per gal.	$134	
21,756 gal. kerosene at 2½ cents per gal.	544	
139,824 gal. locomotive valve oil at ½ cent per gal.	699	
Total		$1,377
Savings of steam used to heat oil in former outside storage tanks (Oil now stored in tanks in basement of reclamation plant)		$1,000
Total annual savings, year ended April 30, 1932		$87,243

On the main floor of the plant, the large center space is reserved for the storage of containers for waste to be reclaimed and for renovated waste. The waste-reworking machinery is located around the east, south and west walls of the building, incoming waste being first weighed and then passed to the receiving table where it is pulled apart by hand on a coarse grating, which permits fine dirt and short ends to drop through, all large pieces of foreign matter being picked out. The packing then is fed evenly to the conveyor of renovating machine No. 1. A roll cutter is provided, consisting of a rotating circular knife to cut back rolls of packing before being fed to the machine.

After the containers have been dumped they are moved to the wash rack where the inside is thoroughly cleaned by means of high-pressure hot-water jets.

In the tank of renovating machine No. 1, the packing is immersed in oil at a temperature of 220 to 240 deg. F., and carried along on top of a series of grates submerged about 6 in. below the surface until it has become heated throughout to the temperature of the bath. All moisture is evaporated from the oil during this operation. The packing is next subjected to vigorous agitation by a series of forks which work the waste back and forth and at the same time open it up and pull it apart thoroughly. The forks draw the waste along on the submerged grate which extends the entire length of the tank so that when it reaches the end, most of the dirt and short ends have been loosened and have fallen through the grate. A scraper conveyor works along the bottom of the tank continuously, removing all solids and short ends that fall through the grate and discharging them into a receptacle located at the front end of the tank, from which they are conveyed to a machine which presses out the oil and forms them into briquets, used in firing up locomotives and furnaces. At the exit end of the first tank, the reclaimed waste is dragged up an incline by a series of picks and delivered to an endless metal belt. The waste is carried to this belt between a pair of specially constructed rolls which squeeze the oil out under a pressure of 2,500 lb. per sq. in.

The reworked waste at this stage contains about 35 per cent of oil and is quite clean. The next step in the process consists of resaturating it with oil. This is done in the tank of renovating machine No. 2, which is filled with new or reclaimed car oil. The temperature is maintained at about 220 to 240 deg. F. Not only



Interior of the Plant—Drums Are Being Filled with Renovated Packing as It Leaves the Machine

is the waste resaturated with oil here, but also any short ends remaining are removed. As in the first tank the waste is dragged out by a set of picks, and passes up an inclined section of grating to be delivered to an endless belt for the final step in the process.

The conveyor for the last stage carries the waste through a long box-like tunnel and series of rollers, where the surplus oil drains away. The speed of the conveyor can be adjusted so that just the right quantity of oil remains in the waste when it drops into the shipping container at the discharge end. Provision is made for weighing the packing at both ends of the machine so that a record can be kept of the quantity handled. The capacity of the machine is about 2,000 lb. of finished packing per hour. It requires 45 min. for the waste to pass from the intake to the discharge end of the apparatus.

Table II—Analysis of Oil Reclaimed by the New Method on the Milwaukee, Compared with the A.R.A. Requirements

	A. R. A. requirements for renovated oil	Oil renovated by the new method on the Milwaukee
Flash point	250 deg. F.	280 deg. F. avg.
Vis. at 130 deg. F. min.	70 sec.	80 sec. avg.
Vis. at 210 deg. F. min.	40 sec.	43 sec. avg.
Vis. at 210 deg. F. max.	70 sec.	
Precipitation cc. max.	0.5	0.15
Pour point F. deg. max.	45	15
Water, max.	1.0 per cent	nil
Ash	Not specified	0.20
Tarry matter	Not specified	0.15 per cent

Since a considerable percentage of the oil is squeezed from the waste by the rolls at the end of the first machine, there is necessarily an accumulation of dirty oil. This is pumped out at intervals into a storage tank. When sufficient has been accumulated for a batch, it is purified by a fire and steam distillation process in a still similar to that used in the refining of crude oil. The still itself is simply a cylindrical tank of 5,000 gal. capacity placed horizontally in a firebrick setting. It is heated by an oil burner and is provided with perforated pipes near the bottom for the admission of steam. The dirty oil is pumped into the still, the fire started and when the proper temperature is reached, steam is admitted. The distillation of oil in the still is accelerated by the use of steam and the vaporized oil and steam pass through a condenser into a collecting tank. The condensed steam separates from the hot oil and settles to a conical bottom where it is drawn off at frequent intervals. The foreign matter, including sand, metallic particles, tarry products, fibres and hot-box cooling compounds, are left behind in the still with a small amount of coke which is formed during distillation. Some heavy oil is also left in the still, being too heavy to be carried over. A thin layer of coke, about 40 per cent of which is sand, metal, etc., forms in the still and has to be chipped out after the still has cooled off. It is a waste product of no value, being too low in combustible matter to use for fuel.

Table III—How Reclaimed Packing on the Milwaukee Checks Up with the A.R.A. Requirements

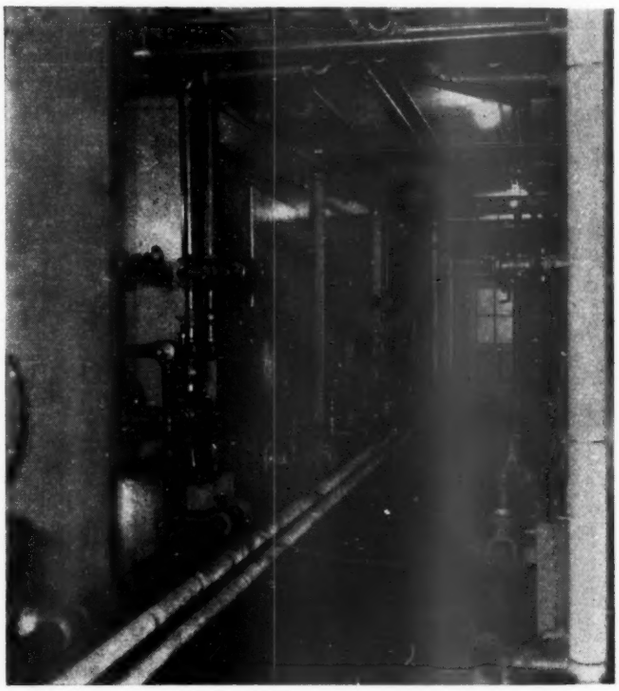
	A. R. A. requirements for prepared packing	Prepared packing by the new method on the Milwaukee
Water, max.	7 per cent	1.3 per cent
Dirt and foreign matter, max.	7 per cent	.4 per cent
Strands shorter than 3 in., max.	10 per cent	0.9 per cent
Oil	Not specified	75.4 per cent
Waste	Not specified	22.9 per cent
Ash	Not specified	5.6 per cent

Table IV—Milwaukee Specifications for New One-Season Car Oil and Waste

OIL	
Flash point, minimum	300 deg. F.
Viscosity at 130 deg.	145 sec., max.
Viscosity at 210 deg.	40 sec., max.
Moisture—maximum	0.1 per cent
Tarry matter—maximum	0.05 per cent
Insoluble impurities	0.1 per cent
Pour point—maximum	0
WASTE	
Wool threads	35 per cent
Soft cotton threads—Cop and spooler	45 per cent
Soft cotton slasher	20 per cent

Oil drawn off from the bottom of the still immediately after each distilling process would become plastic solid if permitted to cool. The oil is gathered in 50-gal. containers where it is mixed with one part of distillate and four parts of oil. This keeps it in a liquid state, and it is known as road oil, used for protecting rail ends, anchor bars, track fittings and signal cross-pipes. Tests indicate that this material dries quickly and hard without leaving any oily surface. Additional experiments are being made with this material as a metal preservative.

How the savings have been affected by the new method of packing and reclamation is set forth in detail in Table I. With all items of labor, material, stores expense, transportation and overhead expense carefully accounted for, over five and a half million pounds of packing were reclaimed at a cost of $1.13 per 100 lb. of packing turned out. The cost per 100 lb. of this renovated packing at the point of use is shown as $1.30 and the saving per car repacked, due to the new reclamation plant, as $1.17. This makes a saving of $84,866 on the 72,535 system and foreign cars repacked during the year ending April 30, 1932. Other savings shown under the summary of savings include $1,377 by the purchase of oil in tank-car lots and $1,000 for steam formerly required in heating outside oil storage tanks.



Arrangement of Oil Storage Tanks and Piping in the Basement

The packing turned out per day averages 22,735 lb.; oil reclamation loss at the still averages 10.2 per cent. and total oil and waste reclamation loss averages 17 per cent. The labor cost per 100 lb. exhibited no marked change during the year, but there was a noticeable decline in the amount and cost of new material purchased, including oil and waste, so that the total reclamation cost per 100 lb. decreased substan-

tially to a minimum of 96 cents per 100 lb. in April, with an average of $1.13 for the year.

In concentrating repair work at nine major points where the air-brake, draft-gear and other necessary work is performed at the same time, forces have been specialized and a suitable saving effected over former practice. Labor savings in dope houses alone, by the provision of prepared packing, amounts to approximately $25,000 a year. This has been made possible by the reduction from 32½ to 14 full-time positions working less than one half the number of hours per month. By specialization of forces and closer supervision, the actual labor cost of repacking cars has been substantially reduced, although credit is not taken for this reduction in the savings set forth in the table.

Certain large savings, besides those mentioned, which are difficult to evaluate have resulted from the improved quality of packing and attendant reduction in hot boxes. The average mileage between freight car set-outs on account of hot boxes has been increased from 135,420 in 1927 to 286,025 in 1931 and 462,802 in the first three months of 1932.

It is not claimed that this notable increase in mileage per hot box has been entirely due to the use of a better grade of reclaimed journal-box packing. An intensive campaign of servicing journal boxes, instituted in 1930, was reflected in the performance of that year, carried through into 1931 and, together with the use of the improved packing, was responsible for the favorable performance secured in that year. The figures are particularly significant because they indicate a highly satisfactory performance under adverse winter conditions of both the reclamation method and the one-season car oil now standard on the Milwaukee.

The way in which the oil and journal-box packing reclaimed at the Milwaukee plant compares with, and more than meets, the A.R.A. requirements is shown in Tables II and III. It will be noted that, in addition, other values have been included in the Milwaukee specifications for both the waste and oil, because some of them are believed to be of great significance in determining the value of the material. The specifications for the one-season car oil adopted by the Milwaukee, together with the better grade of waste for freight cars, are shown in Table IV.

Test of Six-Hour Day Proposed

WASHINGTON, D. C.

ALTERNATIVE suggestions for a field test on a typical operating division of the effect of the application of the six-hour day principle in railroad service, or a practical test to be made by actually putting a six-hour day into immediate effect on such roads and for such classes of employees as may be agreed upon, were put up to the railroad managements and the railroad labor organizations by Commissioners Eastman and McManamy of the Interstate Commerce Commission on June 2, and were taken under consideration by them with a view to advising the commission of their reaction to the proposals on June 16.

These suggestions were tentatively advanced by the commissioners, for the purpose of supplementing the investigation being conducted by Division 6 of the effect of the application of the "six-hour day principle," undertaken by direction of a Congressional resolution, at an informal conference held at the close of the presentation of testimony on behalf of the labor organizations at the hearing which began on May 11. While they were welcomed by the labor representatives, counsel for the railways said they had no authority to express any views as to the suggestions, but would have to refer them to the managements. It was later arranged to refer them to the regional organizations of the railways that deal with labor questions.

Eastman Suggests Field Tests

Commissioner Eastman, who made the first suggestion for field tests, proposed that the commission, through its staff, make a study on a typical operating division, in co-operation with representatives of management and labor, of the effect of the application of the six-hour principle, on the assumption that the present wage rate for eight hours be paid for six hours, both under present conditions and under what might be agreed upon as normal conditions, on two bases. The first basis would be for the purpose of determining how the six-hour principle could be applied to produce the maximum increase in employment and the effect upon cost. The second basis would be to ascertain the most economical way of applying the six-hour principle and the effect it would have on employment.

Commissioner McManamy then proposed the idea of an actual test, saying he had confidence in the fairness and ability of both the railroads and the employees' organizations to work out and settle the practical methods of making the test. His suggestion, however, was that the employees be paid pro-rata, that is at the rate of six-eighths of a day's pay for six hours, and that any questions that arise be settled by conference or, if necessary, submitted to arbitration. So far as many employees are concerned, he said, they are not working that much now.

Both commissioners said the suggestions were put forward rather tentatively and with some doubt as to their practicability, but with the hope that the two sides in cooperation could work out some plan for aiding the commission in its investigation, on which it is directed to report to Congress by December 15. It was pointed out that if an inconclusive report were submitted to Congress the probable result would be a series of hearings before Congressional committees on this technical question.

Commissioner McManamy did not say just what he thought would be proved by such a test as he suggested but he said he was not encouraged by the progress made at the hearing and that the employment situation is becoming worse. He also said that one of the largest railroad shops in the country had been on a six-hour day basis for several weeks, and referring to a discussion of "technological unemployment," he said, "the machine is apt to devour us if we don't control it." He added that 700,000 railroad men are "doing no work at all." When one of the labor representatives suggested that under his plan for only six hours' pay per day the employees "would be making all the sacrifice," Mr. McManamy said they would be contributing in work rather than in dollars to the relief of unemployment.

A. O. Wharton, president of the International Union of Machinists, first opposed the suggestion for a practical test, saying that it would be a waste of time to talk to the railroads about a plan which would increase their operating expenses at a time like this. That was before Commissioner McManamy had suggested that the men be paid pro-rata on the present wage basis. Mr. Wharton said the labor organizations had been trying for two years to get the railway executives into a conference on the six-hour day plan and that when they finally did get into conference in January the only result

was a wage reduction. He took the position that there would be no difficulty about applying the six-hour principle to 80 per cent of the railway employees, but that the difficulty in gaging the effect would be involved in its application to only 20 per cent, presumably the train service employees, and that the best information as to the effect is available to the commission in the experience of the transition from ten to eight hours after the enactment of the Adamson law.

Mr. Wharton said that the theory of the voluntary wage reduction was that it would "start some wheels turning" and result in increased employment, but that, while he was not criticizing the good faith of the managements, thousands of additional employees had been laid off while the hearing has been in progress. When he said that the only remedy for existing conditions that railway and industrial managers have to offer is the "perfectly asinine" one of wage reductions which only makes conditions worse, and that he would like to ask them "where we are going," Jacob Aronson, general counsel of the New York Central, asked how a railroad could keep up wages without revenues and asked Mr. Wharton if he could do any better if he were a railroad president or if he were a king. Mr. Wharton replied that he was egotistical enough to think he could do something.

Several of the labor representatives present told the commissioners that they would be glad to meet the railway executives to consider the proposals at any time.

When Donald R. Richberg, counsel for the Railway Labor Executives' Association, suggested that perhaps the subject could be referred to the committee of nine railway executives that conferred with the labor executives on the voluntary pay cut, Charles P. Neill, manager of the Bureau of Information of the Southeastern Railways, said he thought that committee was "functus officio" and that the matter would have to be taken up with the individual roads, which would take more than two weeks.

Commissioner Eastman said that if the railroads could not give a positive answer by June 16 the commission would at least like to be advised by that time what the situation was. As no record was taken of the informal conference some of the railway counsel suggested that it might be better if the commission's suggestions were put in writing to avoid confusion or misunderstanding, but Commissioner Eastman said they were merely tentative and he would welcome any suggestions for the future conduct of the investigation. Mr. Richberg said he had no authority and could only carry the commissioner's suggestions back to the organizations, but that he wanted to say it was "high time that somebody made such a proposal to both sides" and that it ought to be made to all industry. There ought to be counsel together to relieve unemployment in some way in this national crisis, he said, and he expressed cordial sympathy with the suggestions. He added that he desired also to express his appreciation of the situation of the carriers.

This closed nearly three weeks of hearings, except that time may be allowed later for some rebuttal and Commissioner Eastman said that occasion for some future hearings may arise in connection with the investigation. The first week of hearings was taken up with testimony of railway officers as to the results of studies that had been made indicating that the introduction of a six-hour day would increase railroad payrolls over $600,000,000 a year on the 1930 basis. These studies were made on much the same basis as those proposed by Commissioner Eastman to be made under commission supervision.

This was followed by nearly two weeks of testimony by representatives of the various labor organizations. They put into the record voluminous statistics to show the extent of "technological unemployment" in various classes of service and the gradual increase in railroad operating efficiency per hour and per man from which they argued an increase in their productive efficiency as entitling them to higher wages per hour, although no figures were given as to the capital cost that entered into the increase in efficiency. General chairmen of the various organizations on different roads analyzed conditions for particular classes of employees or for divisions to show that it would be feasible from the operating or service standpoint to apply the six-hour day principle and to increase the number of employees. They generally disputed the results of the railroad studies of the increase in cost, criticizing them on the ground that they were based on an excessive estimate of overtime with too little reduction in hours per man, and asserting that the cost would be much less than shown or could be absorbed by increased efficiency and elimination of wastes.

The "Principle" of the Six-Hour Day

The testimony indicated some variance of opinion as to what was contemplated by the "principle" of the six-hour day and some of the witnesses for the clerks and maintenance of way employees indicated a preference for five eight-hour days per week to six six-hour days.

Otto S. Beyer, consulting adviser to the Railway Employees' Department of the American Federation of Labor, described some of the results of the application of the co-operative plan on the Baltimore & Ohio and other roads, saying that the morale and efficiency of the employees have been greatly improved by this co-operative movement, but that the increasing unemployment due to mechanical improvements is impairing the morale and that the six-hour day is necessary to restore it. Other witnesses who testified for the labor organizations included T. C. Cashen, president of the Switchmen's Union of North America, George M. Harrison, president of the Brotherhood of Railway Clerks; L. M. Eddy, vice-president of the Order of Railroad Telegraphers; D. C. Cone, vice-president of the Brotherhood of Railway Signalmen; J. H. Myers, vice-president of the Brotherhood of Maintenance of Way Employees, and J. W. Roberts, consulting accountant.

Commissioner Eastman has received a letter from Mr. Richberg responding to the suggestions on behalf of the Railway Labor Executives' Association, which seems to prefer Mr. McManamy's proposal, as follows:

"If, in the judgment of the commission, it seems desirable to supplement the evidence taken in this proceeding by making test studies at certain points on certain railroads we will be glad to cooperate in aid of the commission's effort to gather the results of an impartial survey of typical conditions. We recognize, however, as does the commission, that it is practically impossible to estimate satisfactorily under actual eight-hour operation the conditions and expenses of operation under a theoretical six-hour day.

"Concerning the possibility of obtaining an experimental actual operation under the principle of the six-hour day, we wish to point out that we have been proposing to the railroad managements for many months the application of this principle. We stand ready at any time to meet any railroad management or any committee representing railroad managements in an effort to arrive at an agreement whereby we could obtain an adequate experimental application of this principle in railway operations."

Rate Tables Save Time in Pricing Material

Banking house methods of computing charges prove short cuts in stores and shop accounting

By A. J. Sowarby

New York, Ontario & Western, Middletown, N. Y.

ABOUT two years ago, it occurred to me that in my daily accounting work on the New York, Ontario & Western, time was being wasted by repeatedly figuring, during the same month, the same number of units charged at a price per hundred units. This was particularly true in handling iron and steel items, such as bolts, nuts, rivets, etc.

The charges in connection with the motive-power stock at the main shops at Middletown, N. Y., were averaging $50,000 per month. The charges for material were arrived at by taking the supply order slips showing the material used and extending the prices. The materials were charged to individual engines or cars, and also to various other accounts.

Ever-increasing demands for speed and accuracy have practically eliminated fractions of a unit from records of commodities that are priced by the hundred units. In computing the cost of an item, priced by hundred units, the practice of dropping less than one-half cent and carrying one-half cent or over as one whole cent is almost universal and has been adopted in nearly all lines of business.

Because of this practice of carrying one-half unit and over as one whole unit, and one-half cent and over as one whole cent, it appeared necessary to devise some method of saving time in making the numerous computations required. As a means to this end, the writer prepared rate sheets covering average monthly prices with which to facilitate calculations. This resulted in a saving of time, even over the use of machines, as it was quite unnecessary to check extensions to be sure of their accuracy.

Over a year ago, as a result of the depression, work of like nature at Norwich, N. Y., and Mayfield Yard, Pa., was discontinued with the reduction of forces, and the charge slips were forwarded to Middletown, N. Y., and added to the work there. Owing to the decrease in expenditures, monthly total charges for the three shops are now about $50,000 per month. The number of material charge slips and extensions increased, however, averaging 12,000 or more slips per month, requiring an average of 35,000 extensions. In view of this extra work, a book of tables was prepared to cover all prices.

Comparative Test of Extensions

	Calculator			
	Time for 15 Extensions	Time for 25 Extensions	Time for 40 Extensions	Time for 80 Extensions
Time consumed	1¼ min.	3⅓ min.	6¾ min.	11½ min.
Av. time for 1 ext....	5 sec.	8⅘ sec.	10 sec.	7⅘ sec.
	Rate Tables			
Time consumed.....	1 min.	2½ min.	5 min.	8½ min.
Av. time for 1 ext...	4 sec.	6 sec.	7½ sec.	5 5/6 sec.
Time saved	¼ min.	1 min.	1¾ min.	3 min.
Av. saving for 1 ext.	1 sec.	2⅘ sec.	2½ sec.	1 29/30 sec.
Per cent of time saved	28	28	24	26

Of the 35,000 or more monthly extensions to be made, about 12,000 are priced at a rate per hundred units, and can thus be made directly by using the rate tables. In a test, extensions with a mechanical calculator consumed 11½ min. for 80 extensions, as compared with 8½ min. using the pricing tables, showing a saving of 3 min. by the use of the tables, or 26 per cent. The reduction in time required to make extensions is brought out in the table.

How Tables Are Used

The tables, a sample of which is illustrated, consist of separate rate groups, each rate group being prepared to show in tabular form 100 divisions of a given price per hundred units. Thus, the page covering the rate of $.05 per hundred units gives in even numbers the value of the rate for 20 units, 45 units, 125 units, etc., up to 1,000 units. Likewise, the page covering the rate of $3.47 per hundred units shows the value for each unit from 1 to 1,000. With any item that costs more than one cent, in these extensions, the fractional values of less than one-half cent have been dropped, while one-half cent, or over, has been carried into the cost as one whole cent in all computations.

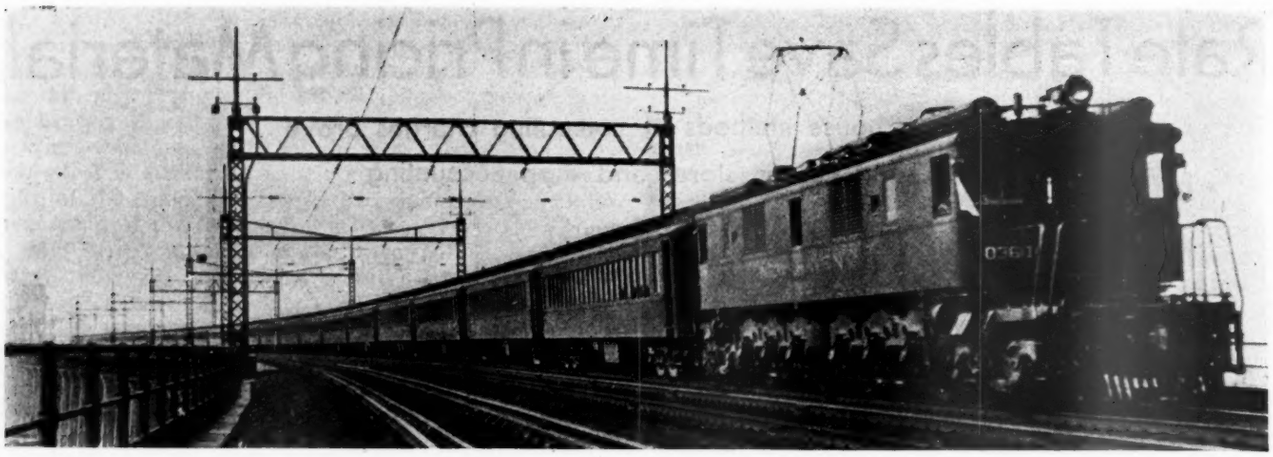
In computing costs with these tables, the method is simply to refer to the page or pages whose rates per hundred added together give the actual rate to be ex-

(*Continued on page 985*)

Units
Rate per Hundred ~~and Hundredweight~~
$ 8.16

Units	Amounts	Units	Amounts	Units	Amounts
1	.08	36	2.94	71	5.79
2	.16	37	3.02	72	5.88
3	.24	38	3.10	73	5.96
4	.33	39	3.18	74	6.04
5	.41	40	3.26	75	6.12
6	.49	41	3.35	76	6.20
7	.57	42	3.43	77	6.28
8	.65	43	3.51	78	6.36
9	.73	44	3.59	79	6.45
10	.82	45	3.67	80	6.53
11	.90	46	3.75	81	6.61
12	.98	47	3.84	82	6.69
13	1.06	48	3.92	83	6.77
14	1.14	49	4.00	84	6.85
15	1.22	50	4.08	85	6.94
16	1.31	51	4.16	86	7.02
17	1.39	52	4.24	87	7.10
18	1.47	53	4.32	88	7.18
19	1.55	54	4.41	89	7.26
20	1.63	55	4.49	90	7.34
21	1.71	56	4.57	91	7.43
22	1.80	57	4.65	92	7.51
23	1.88	58	4.73	93	7.59
24	1.96	59	4.81	94	7.67
25	2.04	60	4.90	95	7.75
26	2.12	61	4.98	96	7.83
27	2.20	62	5.06	97	7.92
28	2.28	63	5.14	98	8.00
29	2.37	64	5.22	99	8.08
30	2.45	65	5.30	100	8.16
31	2.53	66	5.39	200	16.32
32	2.61	67	5.47	300	24.48
33	2.69	68	5.55	400	32.64
34	2.77	69	5.63	500	40.80
35	2.86	70	5.71	600	48.96
				700	57.12
				800	65.28
				900	73.44
				1000	81.60

A Page from the Pricing Tables



One of the New Locomotives on a Test Run Hauling a 24-Car Train Over the Hell Gate Bridge

Design of New Electric Locomotives Substantiated by Performance*

Service tests on the ten new electric locomotives recently placed in operation by the New Haven show them capable of exceeding load requirements with small temperature rise—Some of the features of design are explained

ABOUT two years ago it was decided that locomotives of greater capacities were needed to handle the New Haven through passenger trains, often consisting of 15 Pullmans and weighing approximately 1,200 tons. Even larger trains requiring extra sections were frequently encountered.

The ever-changing picture necessitated the design of locomotives, not only for service between New Haven and Grand Central Terminal, but also into Sunnyside yards, the Pennsylvania Terminal, and eventually farther south.

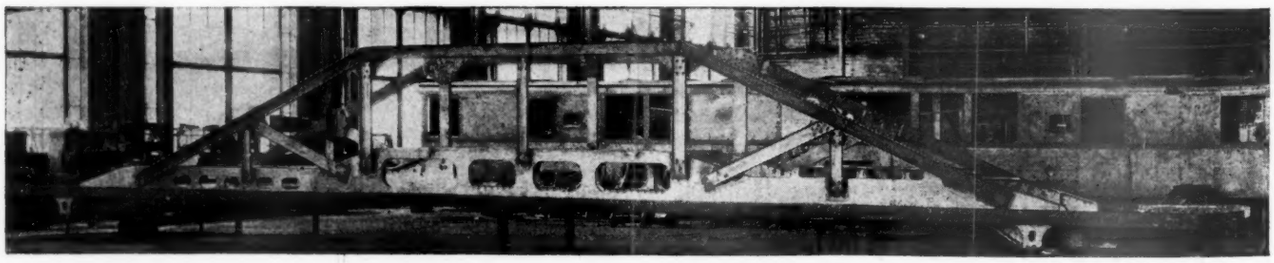
The first of the new locomotives was placed in service June 22, 1931, and the last one September 30, 1931, and about October 1 they had accumulated nearly 120,000 miles.

On the New York Central there are short grades of 1 per cent; between New Haven and Stamford, the maximum grade .6 per cent; while from Oak Point to Sunnyside, the maximum grade is 1.2 per cent; and on the eastbound route under the East river the maximum grade is 1.5 per cent. If the service of these locomotives is extended farther they will be faced with a 1.9 per cent grade under the Hudson river and experience and operating tests show they will fully meet all expectations.

Locomotive Cabs

The cabs are built with the conventional operating compartment at each end and with space for the control, auxiliary apparatus, and water tank between them. The train heating boiler, blower, feedwater pump, and atomizer motor are mounted in the No. 2 operating compartment. On each side of the main cab is an aisle between the operating compartments, with ample headroom. To secure space for mounting the twin traction motors, and for supplying air to them, it was necessary to raise the cab floor in the sections above the

* A summary of the two papers presented respectively by J. C. Hassett, mechanical engineer, New York, New Haven & Hartford, and W. M. Guynes, assistant engineer, transportation department, General Electric Company, before the New York Railroad Club, October 16, 1931. A general description of the locomotives was published in the September 19, 1931, issue of the *Railway Age*.



The Cab Girder Channels, Steel Underframe and Platform

motors. Advantage has been taken of this requirement, and the compressors and traction motor and transformer blowers are mounted in such a way that they can readily be removed for maintenance purposes directly through the removable louver openings in the sides of cab. Further, to facilitate easy maintenance these compressors and blowers, together with the transformers, preventive coils, transformer blowers, highspeed breakers, etc., are all arranged for removal by a shop crane through openings in the roof.

Table I—Ratings, Weights and Principal Dimensions of the 0351=0360 Series of Locomotives

Length over coupler pulling faces	77 ft. 0 in.
Over cab	60 ft. 0 in.
Total wheelbase	66 ft. 0 in.
Rigid wheelbase	13 ft. 8 in.
Height overall pantograph locked down	14 ft. 3 5/16 in.
Width over cab	10 ft. 0 in.
Total light weight	393,000
In running order	403,000
On driving axles	272,000
Weight per driving axle	45,333
Weight per guiding axle	32,750

In order to permit a light underframe, a truss construction is added above the cab underframe to provide the proper strength and stiffness. The underframe with the truss weighs only 400 lb. per foot of cab length, as compared with 635 for the underframe alone on a very recent locomotive with the same type of running gear.

Trucks

The driving and end trucks are of the integral cast steel design, the two driving trucks being connected with an articulated ball joint which permits vertical movement, rolling action between the trucks, but no lateral movement.

The guiding characteristics of the engine trucks are such that on straight track where a long rigid truck is desirable, the restraint is high, while on curves the restraint drops to as low as 7 per cent, and thus allows the locomotive to run through easily and without binding.

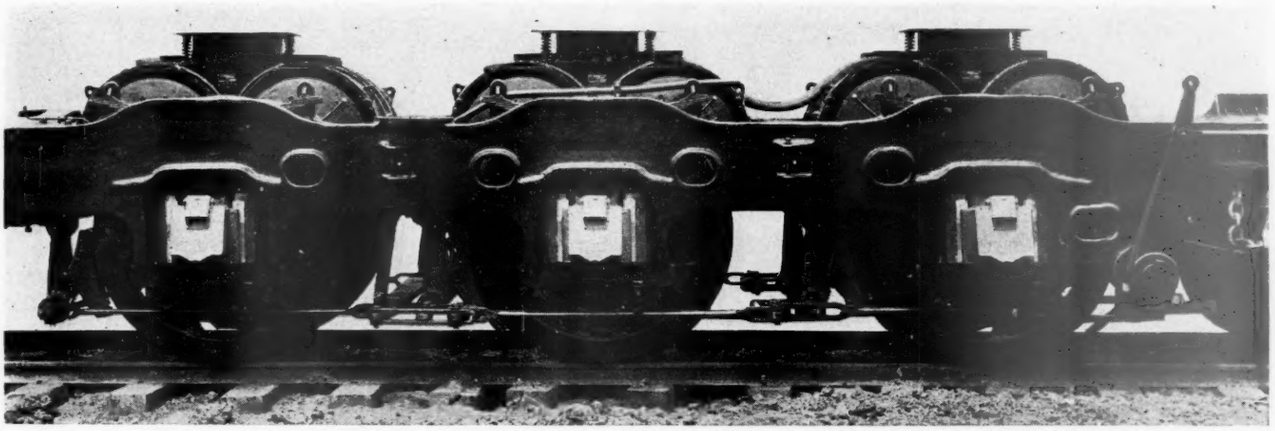
The pedestal arrangement is such that by dropping the tie bars the pedestal shoes may be dropped, the journal boxes removed and the floating hub liners renewed without dropping the axle. Since these locomotives use frame-mounted motors the axle can be dropped without removing the motor or making special provisions for holding it.

The locomotive is equipped with a modified No. 14 El air brake equipment using two automatic brake valves, two independent brake valves, and one distributing valve. The foundation brake rods are mounted outside the driving wheels to facilitate inspection and maintenance and to give freedom in removing the traction motors from the trucks to a drop pit.

Quill Drive

Twelve traction motors mounted in six solid fabricated twin frames are used. Two solid pinions per twin motor engage in a single solid non-resonant gear mounted on a quill. Two integral quill spiders, each carrying six sets of spring cups, are used with each twin motor.

Oscillating of armatures cannot be noticed on the locomotives due to the initial tension on the springs and the snug fit of the drive between wheel spokes. To assist in keeping the maintenance to a minimum, hardened wearing plates are welded on the ends of the cups and on the pads on the spokes of the wheels. Further, any spring with cups and parts can be disassembled without disturbing anything else. There are six sets of cups driving in each wheel, or twelve per axle, and tests and calculations show that if it were necessary, one cup would drive the axle and prevent a train delay.



One of the Driving Trucks—Axle Adjusting Nuts Are Accessible Through the Holes in the Frame

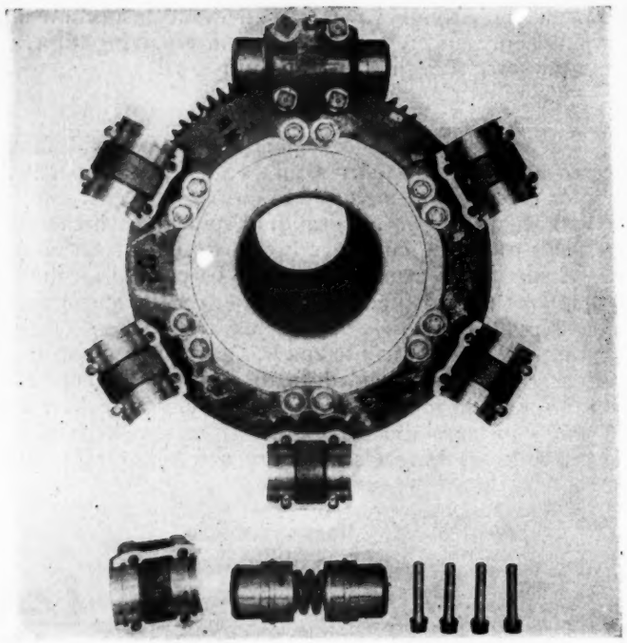
A three-point suspension is used for each twin traction motor, two lugs being provided on one side of the motor and one on the other side. These rest on corresponding removable brackets bolted to the truck frame. Two of the lugs and two of the brackets are provided with slots in which a square key is inserted to hold the motors against buffing. By the insertion or removal of shims under the key it is possible to adjust the motors in the trucks so that the quills will always be central with the axles even though tires for one pair of drivers in the truck may become worn. Further adjustment of the three axles in any truck is provided by means of the adjusting nuts on the ends of the spring hangers.

Train Heating Boiler

The heating boiler is of the vertical fire tube type with 1248 three-quarter-inch diameter copper tubes. The diameter of the shell is 51 in. and the working pressure 150 lb. The total weight of the boiler completely installed, including the lagging, jacket, firebox brick, superheater coils, together with usual boiler mountings and with the boiler filled to the normal operating level, is 11,450 lb.

The locomotives have a water and oil capacity which is practically double that of the older locomotives, there being 15,000 lb. of water and 3,000 lb. of oil.

Arrangement and design of boiler auxiliary apparatus has been materially altered as compared with the boil-



Quill Drive Showing Spider and Parts Disassembled

ers in the old locomotives, where feed water injection was by means of air pressure from the main reservoirs applied to the water tanks. For the new boilers, injection is accomplished by a duplex piston steam pump.

Forced draft for the older boilers is supplied from main motor air ducts, while on the new boilers a steam turbine driven blower furnishes the necessary air for combustion, in conjunction with a small blower which is a part of the burner atomizer equipment and which is motor driven, current being taken from the control circuit supplied from the transformer blower motor-generator set and a storage battery.

With this arrangement, once the boiler is started its operation is entirely independent of main power supply since it utilizes its own steam for auxiliaries with the exception of the atomizer motor, which draws current from the control storage battery. Therefore, if it should happen that the supply of electrical energy should be shut off and the train stopped, the heating of cars can be continued until fuel and water supply is exhausted.

Electrical Protection and Motors

The locomotives are equipped with Thyrite lightning arresters, which give protection that has been sorely needed in the past to prevent train delays and locomotives out of service. The transformer primary is protected by an oil circuit breaker having a rupturing capacity of 100,000 kva.

The traction motor circuits are arranged so that the fields are on the grounded side as has long been the standard practice on straight d.c. locomotives, and these circuits are protected by slip or flash relays and the differential relay which control the J. R. high-speed circuit breaker on both a.c. and d.c.

The real difficulty with a.c. traction motors of the past has been poor commutation during starting, and also at high speeds. The starting troubles have been overcome on the new motors by the use of low flux per pole and additional poles, the New Haven motors having 12 poles per rotor. High speed operation has been made satisfactory by varying the commutating field strength, producing good commutators and brush holders having low inertia in the moving parts.

Good commutators are extremely important and unusual attention has been given to careful heat treatment and spinning before they are pronounced satisfactory for production.

These armatures have 306 armature coils and 102 equalizers, and the use of a high temperature solder instead of tin for connecting the equalizers and upper and lower windings at the pinion end has removed one of the weak links of the armatures. For years this place caused a great many worries as it is one of the hot spots and often reaches a temperature that will melt tin solder.

Dynamically balancing of commutators, cores and completed armatures has given the brush holders and brushes the chance of contributing to good operation.

During the negotiations with the New Haven, it was estimated that a rating of 457 continuous horsepower per axle was sufficient, and consequently this was the rating given the twin traction motor. However, when the design was completed, the motors tested, and the air delivery on the locomotive definitely determined, it was found that the twin motor as installed could be safely rated 550 continuous horsepower at the axle.

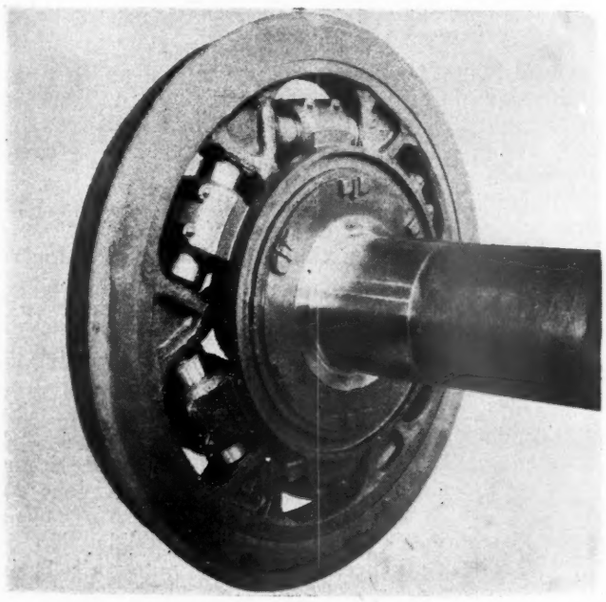
As already mentioned, weight restrictions were ever in the picture, so consequently this motor was built as light as possible without resorting to aluminum. A complete twin motor, including quill, gear, pinions, gearcase, and quill linings weighs only 14,000 lb., or 25.5 lb. per continuous horsepower, which is about 75 per cent of previous similar motors.

The especially efficient duct system and the low pressure required for the multiple blowing of the twin traction motors has greatly reduced the power used by the traction motor blowers, in fact, 34 horsepower is putting 30,000 cu. ft. of air per minute through the traction motors, grids, etc. While 2,800 cu. ft. per minute was desired for each twin motor at the time the design was begun, actually about 4,300 cu. ft. is being given each of these twin motors.

During manufacture, tests were made on all apparatus, and continuous heat runs and commutation tests were made on the traction motors to make sure of meeting the contract ratings given in Table II.

Performance

Cyclic run tests were made on the stand showing that if very unusual conditions were not encountered, the traction motors could handle 20 eighty-ton cars in ex-



Quill Drive Showing Inside of Wheel with Spider Quill, Spring Cups, Etc., Assembled

press service between Grand Central and New Haven, or Pennsylvania Station and New Haven, including a stop on the 1.5 per cent grade under East River, eastbound, where 67,500 lb. tractive force would he required to start and take the train out and over Hell Gate. Also other tests indicated that no motor trouble should be expected if 14 sixty-five ton coaches were handled in local service in accordance with time table No. 110.

Further runs on the test track failed to show any weak links and indicated that it would be entirely safe to rate the locomotive at 3300 continuous horsepower and 67,500 lb. maximum tractive force on the a.c. zone, or 28,000 lb. tractive force at 44.5 m.p.h. instead of 18,000 lb. tractive force at 57 m.p.h. and 25 per cent adhesion for maximum tractive force instead of 20 per cent adhesion.

Table II—Contract Ratings

A-C 11,000 Volts, 25 Cycles, Single Phase and D-C 600 Volts

A-c continuous	18,000 lb. T. E. @ 57 -m.p.h.	or 2,740 hp.
A-c. hourly	25,200 lb. T. E. @ 51.2-m.p.h.	or 3,440 hp.
D-c. continuous	22,500 lb. T. E. @ 43.5-m.p.h.	or 2,610 hp.
D-c. hourly	31,200 lb. T. E. @ 37.4-m.p.h.	or 3,140 hp.

Train Capacity on Tangent Level Track-Full Voltage

Express Service

15—eighty-ton cars at 65 m.p.h. on a.c. zone.
15—eighty-ton cars at 58 m.p.h. on d.c. zone.

Local Service

10—sixty-five ton coaches with same schedule as given in time table No. 110.
Maximum tractive force 54,000 lb. for 8 min.

After the witnessing of tests on the locomotive at Erie by the New Haven officials, shipment to the railroad was begun and each locomotive was put through local service runs with 11 sixty-five ton coaches.

Express service test runs were arranged on the road, and on September 16, runs with 18 and 19 sixty-five-ton coaches failed to show the limit on the 0351-0360 series locomotive in this class of service. In fact, tests with 24 of these coaches, on October 6, running westbound, and making stops at Bridgeport, South Norwalk, Stamford, and West Farms with an acceleration from a slow down to 20 m.p.h. at the foot of Hell Gate grade, and running eastbound with stops on the .75 per cent grade of Hell Gate and at Bridgeport failed to show temperatures equal to those for the continuous rating.

Rate Tables Save Time in Pricing Material

(*Continued from page 981*)

tended, and draw off the value on these pages shown opposite the number of units by which the rate is to be multiplied and then to add these values together.

If the problem should be one of determining the cost of 54 lb. of steel costing $8.16 per 100 lb., the computer turns to the table covering the $8.16 rate and the amount opposite 54 gives the correct cost of $4.41.

If the problem should be one of determining the cost of 454 lb. of steel at $8.16 per 100 lb., the computer turns to the table covering this rate, draws off the amount $4.41 shown opposite 54 and adds to it the amount of $32.64 shown opposite 400 in the same page, thus getting the correct cost of $37.05.

Method with High Rates

For the purpose of computing the cost of items priced at rates higher than $10 per hundred units, the tables are supplemented by 10 so-called key tables in which the rate of $10, $20, $30, etc., as the case might be, is subjected to the same numerical divisions shown in the other tables.

If the problem should be one of computing the cost of 54 lb. of steel priced at $18.16 per 100 lb., the computer turns first to the rate table for $8.16 and takes the amount of $4.41 shown opposite the figure 54. He then turns to the rate table for $10 and takes the amount of $5.40 shown opposite the figure 54. Adding these two values gives the correct charge of $9.81.

In addition to dividing the rate per hundred units into 100 parts, each table gives the value of rates for 200 units, 300 units, 400 units, etc., up to 1,000 units. The 10 figures from 100 to 1,000 in each table are shown as key figures which are used for articles priced in single units. The cost of any number of articles from 1 to 10 is obtained with these key numbers simply by ignoring the last two ciphers in the figures. Thus, where the problem is one of computing the cost of 7 drills priced at $8.16 each, the computer turns to rate $8.16, and the amount shown opposite 700 gives the correct cost of $57.12.

Method for Large Quantities

When an item is priced by the single unit and the number of articles totals more than 10, the computation is made by moving the decimal point and adding ciphers to the amount. Thus, where the problem is to compute the cost of 47 drills priced at $8.16 each, the computer turns to the rate of $8.16 and takes the amount of $32.64 shown opposite the figure 400. The value of 40 units is obtained by advancing the decimal point one place to the left and then, since the values on the table are expressed in 100 units, the decimal point is moved two positions to the right to show the value per unit, the amount being $326.40. To this is then added the value $57.12 opposite the figure 700, giving the correct amount $383.52.

For articles priced in single units at prices higher than $10, the tables for values from $10 to $100 are used. Thus, where the problem is to compute the cost of 7 drills at $18.16 each, the computer turns to rate $8.16 and uses the key figure 700 for 7 and draws off the figure $57.12 by shifting decimal points, as described above. He then turns to the key rate of $10 and the amount of $70 opposite 700 is added to $57.12, giving the correct cost of $127.12.

Computing Discounts

The tables are also adapted for computations where discounts are involved. Thus, for computing the cost of an article priced at $8.16 carrying a rate of discount of 17.35 per cent, making a net cost amounting to 82.65 per cent of $8.16, the computer turns to the rate of $8.16 and takes the amount of $6.69 opposite the figure 82. Then, to obtain the value for the remaining 65 per cent, the decimal point is moved two places to the left in the value of $5.30 shown opposite the number 65, making it read .053. By following the accounting rule of dropping fractional values less than one-half cent, the remainder is 5 cents, which is added to $6.69, giving the correct net cost $6.74. The multiplication otherwise required to obtain this value would require the following steps:

$$\begin{array}{r} \$8.16 \\ .8265 \\ \hline 4080 \\ 4896 \\ 1632 \\ 6528 \\ \hline \$6.744240 \end{array} = \$6.74$$

It is seen that by the use of the tables, costs are

immediately obtained for units from 1 to 100 for commodities that are priced by the 100 units up to rates of $10.

For items numbering more than 100 and for items priced at more than $10, simple addition of figures is all that is required. All multiplications are eliminated by the use of these tables, assuring accuracy as well as speed.

Freight Car Loading

WASHINGTON, D. C.

REVENUE freight car loading in the week ended May 28 amounted to 520,962 cars, an increase of 5,512 cars as compared with the preceding week. This was, however, a decrease of 190,287 cars as compared with the corresponding week of last year and of 339,102 cars as compared with 1930. Loading of grain, coal, coke and miscellaneous freight showed increases as compared with the week before. The summary, as compiled by the Car Service Division of the American Railway Association, follows:

Revenue Freight Car Loading

Week Ended Saturday, May 28, 1932

Districts	1932	1931	1930
Eastern	122,144	158,870	190,750
Allegheny	101,928	140,769	173,464
Pocahontas	32,287	43,504	50,014
Southern	76,775	110,456	122,689
Northwestern	62,116	94,298	137,856
Central Western	81,150	102,999	118,771
Southwestern	44,562	60,353	66,520
Total Western Districts	187,828	257,650	323,147
Total All Roads	520,962	711,249	860,064
Commodities			
Grain and Grain Products	32,008	34,998	35,419
Live Stock	16,286	17,896	21,191
Coal	72,836	115,792	128,166
Coke	3,202	6,217	9,527
Forest Products	18,062	31,318	50,016
Ore	2,543	25,884	58,759
Mdse. L.C.L.	180,490	197,219	215,735
Miscellaneous	195,535	281,925	341,251
May 28	520,962	711,249	860,064
May 21	515,450	754,738	929,606
May 14	517,667	747,057	928,759
May 7	533,677	745,740	932,346
April 30	554,012	774,742	942,674
Cumulative total, 21 weeks	11,656,516	15,360,905	18,705,838

The freight car surplus for the first half of May averaged 731,792 cars, an increase of 3,498 cars as compared with the last half of April. This included 368,786 box cars, 291,774 coal cars, 29,878 stock cars, and 15,484 refrigerator cars.

Car Loading in Canada

Car loadings in Canada for the week ended May 28 totaled 39,564. This was a decrease from the previous week's loading of 4,114 cars, the holiday on May 24 being responsible for the major part of it. The index number declined by only .79 points, from 71.35 to 70.56. The holiday fell in the twenty-second week last year and this accounts for 3,000 to 4,000 cars of the decrease of 11,760 cars from total loadings for the twenty-first week last year.

	Total Cars Loaded	Total Cars Rec'd from Connections
Total for Canada		
May 28, 1932	39,564	17,093
May 21, 1932	43,678	18,789
May 14, 1932	43,777	19,401
May 23, 1931	51,324	27,615
Cumulative Totals for Canada		
May 28, 1932	868,242	444,540
May 23, 1931	1,007,233	594,498
May 24, 1930	1,205,097	763,828

Books and Letters . . .

Time to Attack!

BROOKLYN, N. Y.

TO THE EDITOR:

I have been reading your editorials of the past few months with lively interest. Thank the Lord for the strength and emphasis your magazine lends in calling a spade a spade.

If the railroad executives had gone out and fought the I. C. C., tooth and nail, from the start, they would have had the respect of the Commission, the confidence of the general public, and the roads would not be in the position they are in now. Of course, where the executives have been ham-strung by the banks, or by powerful directors, then the blame belongs there, and those executives have my sympathy, as it is mighty hot to be between two fires.

The article of H. L. Whitridge, in your issue of May 21, smacks of the same vigor and boldness as your editorials. The suggestion for a department of transportation, with a cabinet member, is a good one.

In my humble opinion, if the railroad executives would do like the Warwicks of politics (*play* politics), they could get most anything they went after. By concertedly and vigorously demanding the abolition of the I. C. C. they would create a panic in the Commission and consternation in the hearts and minds of the members, and, incidentally, deprive the average Congressman of his best ballyhoo. These members of the Commission are just ordinary, everyday, individuals (not legal demi-gods), of the average "congressional" type, the only difference being that their failings are serious on account of the position they occupy. Putting the Commission on the defensive by first demanding, would place the railroads in a strong position for finally bargaining. And that is just how politics is played by practical politicians. The railroads, to-day, need some hard, practical politicians to help guide them.

I have noticed, for now well over a year, that the average citizen is taking an interest in the I. C. C., what it is doing, and its personnel. A number of times I have heard the term "The Railroad Supreme Court." Several years ago the average citizen hardly ever took the time to read about the Commission, and cared less about its doings.

As you have consistently preached—the only thing to do is to attack. Yes, and ruthlessly.

AUBREY LOVE,
Vice-President, Graphol Products Co., Inc.

P.S. A car department officer of one of the large roads recently wrote me, and I quote from his letter, as follows: "I agree with you that every railroad and every railroad employee owes a debt of gratitude to the *Railway Age*, and hope they will keep up the good work."

New Book

Some Phases of Fair Value and Interstate Rates, by James Barclay Smith. 101 pages, 9 in. by 5¾ in. Bound in cloth. Published by the Louisiana State University Press, Baton Rouge, La.

With a study of the problem of rate-making in regard to interstate railroads as its stated purpose, this book embraces in the main a critical examination of the differing valuation theories which have from time to time been propounded by contending interests. Opening chapters, discussing such rate-base theories as exchange value, reproduction new, reproduction of service, original cost and prudent investment, are followed first by a detailed analysis of the Smyth vs. Ames decision and then by concluding sections which consider present rate-making and valuation provisions of the Interstate Commerce Act. The author is professor of law at Louisiana State University and the book is further identified as No. VI of the Louisiana State University Studies series.

Odds and Ends . . .

Record Hat Train?

It is a little late for an Easter story, but this is an exceptional one. Making up a special train, 60,000 Easter bonnets moved over the Pennsylvania from an eastern city to a western destination early this year. This is thought to be the largest shipment of hats ever handled in one consignment.

Railroad Service Too Fast?

Is it possible that the public wants slower instead of faster railway service? Such would seem to be the case, at least so far as some of the citizens of Salt Lake City, Utah, are concerned. According to press reports from that city, a delegation of exasperated householders has protested that the Denver & Rio Grande Western trains are pounding through the outskirts of the city at a 40-mile clip. The vibration, the delegation asserted, is weakening walls and foundations in their homes.

Pere Marquette Honored

We assume that there are no subtle implications involved, but anyway a natural gas well, which was recently brought in at Galliver Siding, Mich., was named after the Pere Marquette, the official designation of the well being Pere Marquette Gas Well No. 1. The well has a daily output of 12,500,000 cu. ft. and is the first of a number to be drilled along the right of way of the Pere Marquette's Harrison branch. A party of 60 guests, including officers of the Pere Marquette, were present when the drill went into the gas sand.

Good Record for Careful Handling

Always ready to give credit where it is due, we are glad to pass along the word of a recent instance of exceptionally careful handling of a shipment of building stone. In the construction of the new Pennsylvania station at Philadelphia, 420 cars of stone were required, the originating point being the quarries at Russellville, Ala. The total claim payment on the 420-car movement amounted to only $195.18, or an average of 46½ cents per car. Considering the character of the commodity handled, this is conceded to be a remarkable record.

Passenger Traffic Picks Up

If we are to believe press reports from the Northwest, the Southern Pacific is evincing considerable concern for the safety of its hobo passengers. Rather than have these non-paying passengers killed along its line from inexpert riding of freight cars, the railroad is said to be running empty box cars in many of its freight trains for the use of the travelers. News of the innovation, when it reached the hobo camp outside of Ellensburg, Wash., recently, is said to have cheered some of the boys immensely. A party was organized to leave at once for the South, to take advantage of the service offered. The railroads can get passenger business if they will only make their service attractive enough.

Two Veteran Firemen

Two old-timers on the Lackawanna recently retired, with records which must give them a distinctive place in railroad history. Both of them were locomotive firemen and both lived in Scranton. One of them has been firing a locomotive continuously since 1884, while the other has made his headquarters on the left-hand side of a locomotive cab since 1887. With all this experience, there must have been little about firing a locomotive that they did not know. Commenting upon the services rendered by these two men, an officer of the Lackawanna said that naturally they knew the art of firing locomotives from the ground up, and that every one of the many peculiar noises which a locomotive can give off held a special significance to them. It would be interesting to know how many tons of coal each has shoveled during his lifetime.

This Horseless Age

The companies which now form the Railway Express Agency once owned as many as 25,000 horses, but only three of them are left in service. They are stationed at widely separated points in the East. The two largest vehicle fleets owned by the express agency, at New York and at Chicago, have now been completely motorized. Motorization of the New York fleet was finished last November, and on April 11 of this year the last horse-drawn units of the Chicago vehicle service were retired.

Good Safety Record Pays

If you think that a clear safety record isn't valuable, ask Alex Green, section foreman on the Louisville & Nashville at New Orleans, La. One day Alex took his family for a drive around the city and became involved in an accident. A few days later he was made defendant in a damage suit. The court decided in the railroad man's favor, but the plaintiff appealed and in the second trial it looked as if he would get the decision. Permitted to make a few remarks in his own behalf, Alex proclaimed that he was a careful man, trained in the principles of safety to himself and others. To prove this assertion he handed the judge a card he had received from the railroad, certifying that he and his section gang had a clear safety record for 12 consecutive months. This card won the case. Over-ruling the plaintiff's objection, the judge said, "Any man that can work a gang of section men, do the work they do, for 12 months at a time and not get any of them injured is certainly a safe man, and I give him an honorable discharge. The case is thrown out of court."

What Becomes of Those Gold Spikes?

Fully as interesting as the question of what becomes of old razor blades is the matter of the final disposition of the gold spikes which are customarily driven by visiting notables at ceremonies marking the completion of new railway lines. The Portland "Oregonian" recently became curious about these gold spikes and instituted an investigation, the results of which it printed in a recent issue as follows:

"What happens to the gold spike that is driven at a railroad-completion ceremonial? That's a question asked by the average person, according to railway men, who are quick to answer that the spike is not (emphatically not) allowed to stay in position in the tie for many minutes after it has been driven into the wood. As soon as the newspaper photographers have had opportunity to take their pictures of the history-making event, a pinch bar is used to pull the spike. Were it left unguarded for as long as five minutes, the chances are that some souvenir hunter would have it in his coat pocket and would be fleeing from the scene. Gold spikes are more than a novelty; they are distinct prizes. It is not their intrinsic value, for the gold is only applied on a base of common metal that can stand the strain of sledge hammer blows. It is their historical value that makes gold spikes so desirable. The spike used at Bieber, Cal., to join the Great Northern and the Western Pacific, was furnished by the Oroville, Cal., Rotary Club, and was returned to that club after the ceremonial, according to best information available. Usually the spike is the property of some railroad and is returned to the safe in the office of the railway president."

It would be interesting to tabulate the number and locations of gold spikes which must be scattered around the country. Can any of our readers help us to compile such a list?

NEWS

Return 1.27 Per Cent in First Four Months

Gross revenue declined 24 per cent as compared with first third of 1931

Class I railroads for the first four months of 1932 had a net railway operating income of $87,535,374, which was at the annual rate of return of 1.27 per cent on their property investment, according to reports compiled by the Bureau of Railway Economics. In the first four months of 1931 the rate was 2.14 per cent. Operating revenues for the first four months totaled $1,100,453,859, compared with $1,448,717,001 for the same period in 1931, or a decrease of 24 per cent. Operating expenses amounted to $873,-883,470, compared with $1,148,536,643, or a decrease of 23.9 per cent.

For the four months taxes amounted to $99,883,464, compared with $108,665,-123, for the same period in 1931, a decrease of 8.1 per cent. For April, the tax bill amounted to $25,255,962, a decrease of $2,443,344 under April the previous year.

Seventy-four Class I railroads operated at a loss in the first four months of 1932, of which 23 were in the Eastern district, 13 in the Southern and 38 in the Western.

The April net railway operating income was $20,621,017, which, for that month, was at the annual rate of return of 1.17 per cent. In April, 1931, it was 2.25 per cent. Operating revenues for April amounted to $267,813,620 compared with $369,758,801 in April, 1931, a decrease of 27.6 per cent; operating expenses $211,631,359, compared with $290,663,572, a decrease of 27.2 per cent.

The Eastern District for the first four months reported a net of $68,196,845 which was at the rate of 2.01 per cent. For the same period in 1931 the net was $86,456,023 or 2.56 per cent. Operating revenues $576,074,131, a decrease of 21.5 per cent; operating expenses $440,910,-752, a decrease of 23.5 per cent. Eastern district net for April was $16,398,-112, compared with $24,801,424 in April, 1931.

The Southern district for four months had a net of $9,331,250; annual rate 0.80 per cent. For the same period in 1931, $17,899,987; rate 1.53 per cent. Operating revenues amounted to $140,284,407, a decrease of 26.7 per cent, operating expenses, $114,884,704, a decrease of 25.5 per cent. For April the net was $1,826,-710, compared with $5,359,814 in April, 1931.

The Western district for four months had a net of $10,007,279; rate 0.43 per cent. For the same four months in 1931, the net was $43,830,713; rate 1.84 per cent. Operating revenues amounted to $384,095,321, a decrease of 26.6 per cent; operating expenses $318,088,014, a decrease of 23.9 per cent. For April, the net in the Western district amounted to $2,396,195; in April, 1931, it was $9,492,-327.

CLASS I RAILROADS—UNITED STATES

Month of April

	1932	1931	Per cent decline
Total operating revenues	$267,813,620	$369,758,801	27.6
Total operating expenses	211,631,359	290,663,572	27.2
Taxes	25,255,962	27,699,306	8.8
Net railway operating income	20,621,017	39,653,565	48.0
Operating ratio — per cent	79.02	78.61	...
Rate of return on property investment	1.17%	2.25%	

FOUR MONTHS ENDED APRIL 30

Total operating revenues	$1,100,453,859	$1,448,717,001	24.0
Total operating expenses	873,883,470	1,148,536,643	23.9
Taxes	99,883,464	108,665,123	8.1
Net railway operating income	87,535,374	148,186,723	40.9
Operating ratio—per cent	79.41	79.28	...
Rate of return on property investment	1.27%	2.14%	

Union Pacific to Precool Cars

The Union Pacific is installing equipment for precooling sleeping cars, the initial plans including installations at Omaha, Neb., Denver, Colo., Salt Lake City, Utah, and Cedar City, Utah. At these points sleeping cars which are open to passengers in the early evening prior to the later departure of trains will be precooled.

Court Sustains Indiana Truck Law

The constitutionality of the Indiana law limiting the weight and size of motor trucks using the state highways has been upheld in the superior court at Indianapolis, Ind. A petition for a permanent injunction restraining the enforcement of the law was denied. Concerning the allegation that the state, in enforcing the law, would be exercising unreasonable police power, the court held that the state has the right to regulate traffic on its highways, for their protection and in the interests of safety.

The Indiana law, passed at the 1931 session of the legislature, limits the length of single vehicles to 33 ft. and that of combinations of vehicles to 40 ft. It also restricts the axle weight, on vehicles equipped with pneumatic tires, to 16,000 lb.

Lower Passenger Rates Would Recover Traffic

L. C. Fritch advocates a basic rate of two cents a mile for coach fares

A return to pre-war passenger rates of two cents a mile in coaches and three cents a mile in sleeping cars without the surcharge should be given thorough test by the railroads as a means of bringing back passenger traffic which in recent years has gone to the private automobile and motor coaches, according to L. C. Fritch, vice-president of the Chicago, Rock Island & Pacific, in an address before the Mid-Day Luncheon Club of Springfield, Ill., on June 2. Since 1921, when passenger traffic was at its peak, there has been a steady decline in the number of passengers handled, the decrease from 1920 to 1930 being 43 per cent, he continued. This is due first and foremost to the use of the private automobile and second, to motor coaches. The loss to the rails has been greatest in short haul travel for distances of 100 miles or less. He also contended that the present basic rate in passenger service of 3.6 cents per mile was a war-time rate.

There seems to be no possibility, he continued, of recovering the passenger traffic that has been lost to the highways other than by meeting more nearly the rates prevailing on motor coaches and by reducing passenger rates to make it more economical to use the rails than private automobiles. "Suggestions have been made and some experiments conducted to recover passenger traffic by reducing the rates in coaches to two cents per mile. Low rates for short periods of time have been put in effect to recover lost travel, but to no avail. The decline continues and it seems necessary to take drastic steps to make travel by rail more attractive as to rates and service.

"Many railroads favor a straight two-cents-per-mile rate in coaches with the establishment of the old mileage tickets to induce traveling salesmen to use the rails, and a three-cent rate in sleeping cars without any surcharge. The average rate in the western district in 1930 was 2¾ cents, which would indicate that if present low rates, some as low as one cent per mile, were discontinued and a rate of two cents in coaches and three cents in sleeping cars established, the same number of passengers now carried would produce the same revenue with the hope of largely increasing the number of passengers carried and, therefore, the total revenues. Many who now use the private automobile would use the rails if the rates were reduced and it seems that such a

plan is worth a thorough test. Former tests were not comprehensive enough as to time and territory."

Emergency Rate Increase Whittled Away

In spite of the temporary emergency increase in freight rates authorized by the Interstate Commerce Commission, which became effective on January 4, estimated at about 3 per cent, the average revenue received by the Class I railways for hauling a ton of freight a mile in the first three months of this year was less than it was in the corresponding period of last year, according to the commission's monthly compilation of revenue traffic statistics. The average was 1.044 cents, as compared with 1.046 cents last year, and for the month of March alone the ton-mile revenue was 1.061 cents, as compared with 1.073 cents in March, 1931. This is believed to be the result both of numerous reductions in rates which have been made with constantly increasing frequency during the past year, largely in efforts to meet competition of other forms of transportation, and to changes in the character of traffic that have occurred, and it is generally estimated that the kinds of traffic on which truck competition have been most pronounced bear higher than average rates.

Freight revenue for the first three months of 1932 also has shown approximately the same percentage of reduction as the decrease in the volume of freight traffic as compared with the corresponding period of 1931, which is 22 per cent, although the average haul of freight has increased slightly.

Little Chance For Railway and Bus Bills in Congress

The date for the adjournment of Congress is still uncertain, although it is already apparent that it will not complete the passage of necessary appropriation bills by the time originally planned on, but those who have been hoping for action on the bills in which the railroads are particularly interested see little prospect so far as this session is concerned. No progress has been made on the Rayburn holding company and recapture bills since the rules committee on May 14 declined to approve a rule to bring them to a vote in the House in their combined form. The committee on interstate and foreign commerce then reported the bills out separately and Chairman Rayburn asked for rules for both of them, but the rules committee has taken no action to give preferred status for either and Mr. Rayburn has stated that he does not now expect action before the December session.

Senator Couzens' bus regulation bill has also been at a standstill since May 6, when the committee on interstate commerce, without having acted on the numerous amendments that had been proposed, indicated a desire to have the holding company provisions, which Senator Couzens had originally inserted in the bill as a "rider," handled as a separate bill. Senator Couzens on May 9 introduced such a separate bill and since then little has been heard of the bus bill. Senator Couzens had indicated during the hearing that he was not particularly interested in a bus bill unless it could be made a vehicle for his proposed regulation of holding companies and during the past few weeks he has been particularly occupied, as a member of the finance committee handling the revenue bill, with efforts to prevent overtaxation of the automobile industry.

Railroads are affected by many of the miscellaneous provisions of the billion-dollar increase in taxes as finally passed by both houses of Congress and are directly affected by the increase in the corporation income tax to 13¾ per cent, with an additional ¾ per cent if consolidated returns are filed for a system, on which the revenue bill conferees finally compromised.

Numerous proposals for large increases in the federal government's expenditures on waterways and highways are still to be finally acted upon or shelved, including the Shipstead-Mansfield bill to authorize a $500,000,000 bond issue for river and harbor improvements, and the expenditure of several hundred millions on both waterways and highways is proposed in the $2,300,000,000 Garner-Rainey public works and relief bill passed by the House on June 7. This bill went through the House by a vote of 215 to 182 under a rule which provided only for three hours debate and not even a reading of the bill, but it was designed particularly to help the re-election campaigns of the Representatives and will get into somewhat more conservative hands in the Senate, only one-third of whose members come up for re-election. Senate leaders are also working on a relief bill proposing federal government loans to the states for direct relief and to finance income-producing improvements but more of a disposition has been indicated in the Senate than in the House to try to confine such legislation within reasonable limits, although a Senate Committee on Wednesday approved a bill proposing a half-billion dollar public works program. The Senate is just completing an arduous and complicated struggle to balance the federal budget, after passing the tax bill and some of the more controversial items in the economy bill.

In passing on the economy bill the Senate provided for a reduction in the salaries of members of the Interstate Commerce Commission, the Board of Mediation, the Shipping Board and several other boards and commissions from $12,000 to $10,000 a year, effective on July 1. The economy bill passed by the House had provided that the reduction in the Interstate Commerce Commission salaries should not become effective for another year.

The waterway expenditures program of the Garner-Rainey bill was opposed by Secretary of War Hurley at a hearing before the House ways and means committee on June 2, at which he said the inland waterways projects are being developed as rapidly as is economically wise and the economic condition of the country will allow under the present plan of annual appropriations for the War Department. Secretary of the Treasury Mills also appeared in opposition to the bill before the House committee and in opposition to somewhat similar provisions in a bill introduced by Senator Wagner of New York before a Senate committee. R. H. Aishton, chairman of the executive committee of the Association of Railway Executives, had also appeared in opposition to the waterway provisions of the Garner bill. Secretary Mills said that he could not undertake to float government bonds directly and Reconstruction Finance Corporation bonds indirectly for such a vast program of public works as was proposed, "save at such interest rates as will seriously impair the value of all outstanding government securities and, indeed, of every outstanding bond."

Southern "Mystery Excursion" Well Patronized

The Southern's second "mystery excursion" train, operated from Washington, D. C., on June 5, attracted 500 persons who were afforded a day's outing, including a 224-mile round-trip train ride and a barbecue luncheon, for $1.75 each. The destination of the train was Charlottesville, Va.; it left Washington at 9 a. m. and returned to that city at 9 p. m.

The operating plan was the same as that of previous "mystery excursion" trains of the Southern and other roads, as described in the *Railway Age* of June 4. The crew, upon departure, received sealed orders which were opened only after the journey was under way. Also, en route, there was distributed to passengers a circular revealing that Charlottesville was the destination and outlining the recreation facilities afforded at the Fry's Springs Amusement Park near that point. Among the attractions listed were: A swimming pool, picnic grove, dancing pavilion, musical program, horseback riding, and the many points of historical interest near Charlottesville.

New Fast Freight Services on Central Vermont

The Central Vermont, in conjunction with the Boston & Maine, plans on July 4 to inaugurate a new fast freight service providing over-night delivery for l.c.l. moving between Boston and other B. & M. points and eight of the larger cities and towns served by the C. V. The plans also contemplate a 36-hr. l.c.l. service in both directions between the same C.V. points and that road's pier 29 in New York and the inauguration of a new fast freight train—the Vermont Rocket—to be operated daily, except Sunday, between White River Junction, Vt., and St. Albans.

These new services are to be in conjunction with the Central Vermont's participation in store-door collection and delivery operations in New England which were outlined in the *Railway Age* of May 14; the new services will become effective on July 4 at selected points on the several New England roads which, in this connection, followed the lead of the Boston & Maine and Maine Central.

With reference to trucking arrangements the announcement states that while

it is not expected that the Central Vermont will in all cases own the trucks the railroad will make all necessary arrangements with local truckmen for collections and deliveries.

The Bangor & Aroostook is listed in the present announcement as one of the roads on which the store-door services will be installed. The position of this road had not been definitely determined when the original announcement was made that the plan had been accepted by the B. & M., Maine Central, Central Vermont, Rutland, Montpelier & Wells River and St. Johnsbury & Lake Champlain. It was stated at that time, however, that the Bangor & Aroostook "will probably join in time to participate at the start."

Superintendents' Convention Cancelled

The annual convention of the American Association of Railroad Superintendents, which was scheduled to be held at Detroit, Mich., on June 14-15, has been cancelled in recognition of present business conditions and the inability of the local committee to make adequate arrangements.

Investigation of Railroad Terminal Move Asked

Representative Mead has introduced in Congress a resolution requesting the Interstate Commerce Commisssion to investigate an order said to have been issued by the Boston & Maine on November 18, 1931, "which resulted in the removal of the switching, clerical, roundhouse and other forces and employees from Rotterdam Junction, N. Y., to Mechanicville."

Hearings on Automatic Train Control

The Interstate Commerce Commission has assigned the petitions filed by the Northern Pacific and the Union Pacific for relief from the requirements of the commission's orders as to the continued operation of automatic train control devices for hearing before Special Examiner Shirley N. Mills at St. Paul, Minn., on June 20 and at Omaha, Neb., on June 21.

N. Y. Railroad Club Outing

The New York Railroad Club will hold its annual outing on Wednesday, June 29, when approximately 600 railroad and railway supply company executives are expected to gather at the Westchester Country Club, Rye, N. Y. The variety of events scheduled include golf, and field sports for non-golfers; prizes will be awarded and dinner at 7:30 p.m. is also part of the program. J. S. Doyle is general chairman of the committee in charge.

Freight Claim Meeting

The payment of claims as an inducement to shippers and the loss of traffic to trucks because of too stringent loading requirements, were the principal topics discussed at the forty-first annual session of the Freight Claim division of the American Railway Association at Chicago on June 7-9. The elimination of the bulge pack for fresh fruits and vegetables was also considered. M. J. Gormley, executive vice-president of the American Railway Association, recommended the reduction of railway operating costs so that freight rates can be lowered to such an extent that no other form of transportation can compete where the element of cost is considered. As one step in accomplishing this he suggested that claim payments be reduced by more uniform standards of judging the merits of claims.

Wharfage Charge Proposed

Hearings were held by Trunk Line Association, New York, on June 2, in connection with its proposal to inaugurate a wharfage charge of $1 a ton on all freight discharged from incoming steamers, docking at railroad piers in New York, Philadelphia, and Baltimore, when such freight is moved from the piers otherwise than by rail.

It was pointed out in connection with the proposed charge that the railroads now receive no revenue for the use of their terminals on such freight, and that an increasing amount of this traffic is being handled by motor trucks, especially at Philadelphia and Baltimore. The hearings were held to ascertain the attitude of shippers and, with such information in hand, the Trunk Line Association is giving further consideration to the matter.

Chicago Great Western Indicted

Two indictments were returned on June 3 before Federal Judge John P. Barnes at Chicago, charging the Chicago Great Western and the W. Joseph Corporation of New York, apple shippers, with giving and receiving unlawful concessions. The 25 counts in each indictment involve shipments of apples from points in Washington to Chicago and to other places through Chicago and allege the payment of damage claims in excess of the actual damage. One indictment covers 25 shipments from Wenatchee, Peshastin, Chelan, Cashmere, Malott, Soap Lake, Wapato and Tieton for which the freight charges paid the railroad amounted to $13,736.16. The corporation filed claims with the railroad, charging damage to the extent of $4,929.29 and the railroad paid claims amounting to $1,896.25, while the actual damage was alleged to have been only $150.97.

A.S.M.E. Program for Bigwin Meeting

The American Society of Mechanical Engineers has arranged a program of twenty-four technical papers for its spring meeting which will be held at Bigwin, Ont., June 27 to July 1, inclusive. In addition to the technical sessions, Monday, June 27, will be devoted to an inspection trip of Toronto harbor, after which the party will journey from Toronto to Bigwin. A number of non-technical events have been arranged for each evening during the meeting. The Railroad Division is sponsoring one session, for which a paper on Roller Bearings and a symposium on the Canadian Pacific multi-pressure locomotive 8000 are scheduled. A joint session of the Railroad, and Oil and Gas Power divisions, at which two papers will be presented, is scheduled for Wednesday morning, June 29. Following is an abstract of the program showing the papers of interest to railroad men:

TUESDAY, JUNE 28

10 a.m.

APPLIED MECHANICS (I)

Symposium on Use of Models in Engineering
- Use of Models in Aerodynamics and Hydrodynamics, O. G. Tietjens
- Use of Models Under Centrifugal Force, Philip B. Bucky

RAILROAD

Roller Bearings for Railroad Service, T. V. Buckwalter, vice-president, Timken Roller Bearing Company

The C. P. R. Multi-Pressure Locomotive No. 8000
- Its Construction and Operation, H. B. Bowen, chief of motive power and rolling stock, Canadian Pacific
- Its Machinery, Locomotive Chassis and Tender, J. B. Ennis, vice-president, American Locomotive Company
- Its Steam Generating System, F. A. Schaff, president, Superheater Company

MACHINE SHOP PRACTICE (I)

Oxygen Machine Cutting in Great Britain, C. G. Bainbridge

Developments in the Design and Application of Gearing, Henry E. Merritt

WEDNESDAY, JUNE 29

9:30 a.m.

OIL AND GAS POWER, AND RAILROAD

British High-Speed Oil Engines, J. L. Chaloner

Surface-Volume Ratio as a Critical Factor in Automotive Diesel Combustion Chambers, Julius Kuttner

MACHINE SHOP PRACTICE (II)

Research on Steels and Forgings for Greater Density, Machinability and Durability, Fred W. Cederleaf and W. E. Sanders

Life of Tools Machining Free Cutting Brass, L. D. Spence and Jas. A. Hall

APPLIED MECHANICS (II)

Symposium on Use of Models in Engineering
- Model Testing as Applied to Strength of Materials, R. E. Peterson
- Use of Models in Vibration Research, J. P. Den Hartog
- Use of Models in Studies of Stresses in Structures, Geo. Beggs
- Use of Models in Determining the Strength of Thin Wall Structures, Harold E. Saunders and Dwight F. Windenburg

8 p.m.

STANDARDS OF QUALIFICATIONS FOR ENGINEERS

Present Status of Professional Engineering in Canada, Col. Ibbotson Leonard

THURSDAY, JUNE 30

9:30 a.m.

POWER (I)

British Practice in Steam Turbine Design, F. W. Gardner

Steam Turbine Plant Practice in the United States, Vern E. Alden and W. H. Balcke

MANAGEMENT

Current Problems of Industrial Management, Jas. D. Mooney

Is There Any Basis Left for the Taxable Value of Manufacturing Properties? Chas. T. Main

FRIDAY, JULY 1

9:30 a.m.

POWER (II)

Economic Balance Between Steam and Hydro Capacity, K. M. Irwin and Joel D. Justin

Reduction of Lumber Rates Proposed

A proposal that the lumber and wood products industries of the United States move collectively for a national reduction of approximately one-third in the general level of lumber freight rates was submitted on June 3 by Wilson Compton, secretary and manager of the National Lumber Manufacturers' Association, to the thirtieth annual meeting of that organization at Chicago. Mr. Compton said that omitting from the analysis all forest products except lumber, and based not on total volume but only on that portion which is moved by rail, the ratio of freight cost to mill price, which in 1929 was 32.2 per cent, was at the end of March last 51.2 per cent. He also pointed out that the cost of transportation now

exceeds the mills' price on more than half the lumber now moving by rail. He contended that relatively and in practical effect during the last three years the rail freight costs to move a dollar's worth of lumber have increased 45 per cent, or by an amount equivalent to 15 per cent of the mill value, which on the principal competing materials the corresopnding increase in proportion to value of products has been less than 5 per cent.

Executives Confer

An informal conference was held in New York on June 8, attended by R. H. Aishton, president of the American Railway Association; Hale Holden, chairman of the executive committee of the Southern Pacific; J. J. Pelley, president of the New York, New Haven & Hartford, and J. E. Gorman, president of the Chicago, Rock Island & Pacific.

"The discussion," said Mr. Aishton in a statement following the meeting, "covered the railroad situation not only as to the effect of the depression, common to all industries, but also as to methods of meeting competition with various agencies of transportation now unregulated, together with methods of bringing about further economies in the operation of the railroads, either by additional research, by co-operative action, by co-ordination or by the combination of these factors. These matters are all a subject of constant study by the railways.

"The conference today was for the purpose of giving consideration to the many suggestions received from widely spread sources. No conclusions were reached and no definite statement can be made at this time as to any further conferences. The situation necessarily will have to be discussed at a general meeting of the railroads at a date to be later determined."

Loans To Railroads

Approximately $170,000,000 of loans to railroads has been authorized by the Reconstruction Finance Corporation, according to a statement issued from the White House on June 5 following a conference between President Hoover and officers of the corporation, at which methods for the further co-ordination of all economic agencies engaged in assistance to business, employment and agriculture were discussed. This is in addition to approximately $500,000,000 loaned to banks, agricultural credit corporations, life insurance companies and other financial institutions. "The net result of approximately $170,000,000 authorized loans to railroads," the statement said, "has been on one hand to increase employment by continuing unnecessary construction work, and on the other hand by preventing receiverships, and thus safeguarding the great investments of the trustee institutions such as insurance companies, savings banks, etc. The deterioration of service and other standards which accompany receiverships have also been avoided."

As the Interstate Commerce Commission, up to June 1, had approved loans aggregating about $176,000,000 this indicates that the Finance Corporation has not been far behind it in actually authorizing the loans.

Bruere Calls for Equal Regulation and Less Rail Rivalry

If mutual savings banks are to continue to invest in railroad securities they must have assurances that the railroads will be protected against illegitimate competition of too greatly favored rivals, said Henry Bruere, president of the Bowery Savings Bank of New York, in his discussion of "The Future of Savings" at the twelfth annual conference of the National Association of Mutual Savings Banks, held recently in New York. Another speaker, who discussed the railroad situation, was Edward G. Buckland, chairman of the New York, New Haven & Hartford and president of the Railroad Credit Corporation.

Mr. Bruere told how the savings banks, insurance companies and other institutional investors are uniting "to bring about the development of a stable transportation system" and added that, in addition to the equalization of regulation, assurance must be had "that the railroads do not wastefully compete. We must insist that they unify themselves into strong companies. The rates which they charge for services must be sufficient to permit them to accumulate reserves to bridge depressions."

Mr. Buckland contrasted the restrictive regulation to which the railways are subjected to the freedom enjoyed by their competitors and warned that "unregulated transportation by water or highway means a return to the bad old days of discriminations, rebates, and secret rates and the gradual crushing of the small industries.

"The rail carriers only ask for a fair field and no favor," he continued. "If the American people are to reverse their policy and remove all transportation from regulation, the railroads may not complain, however unwise such a reversal of policy might be. I think it would be a calamity to return to those days. The alternative is to extend to highway and water carriers the same degree of regulation which experience has proved essential to the continued orderly development of the nation."

Ontario Millers Seek Rate Equalization

The protest brought by Ontario millers against the low rail rates made by the Canadian railways last April from the Head of the Lakes ports east, was concluded late last week at Ottawa before the Board of Railway Commissioners and judgment reserved. E. P. Flintoff and Alistair Fraser were counsel respectively for the Canadian Pacific and Canadian National, and A. C. Boyce, an attorney, represented the millers.

The railway counsel called C. E. Jefferson, freight traffic manager of the Canadian Pacific, and W. L. MacGregor, sales manager of the Lake of the Woods Milling Company, to prove their contention that acute competition from the water carriers on the Great Lakes had forced the seasonal reduction on rail rates as a competitive measure.

In summing up the railway case it was declared that the application from mills in Ontario, not in a position to benefit from the rates as at present made available to Head of the Lakes and Georgian Bay ports, simply amounted to a request from these mills that the railways should bear the burden of placing these mills on a competitive basis with others that happened to be situated on the water routes. Counsel held that this should not be charged to the railways.

The counsel for the railways maintained that it was improper to treat emergency concessions forced on the railways to meet unregulated competition, as standards by which normal railway rates should be judged. In addition it was argued that the railway's action in making these special concessions was not voluntary on their part nor did it introduce any new factor in the situation of the interior mills. In recent years, it was argued, these mills have been subjected to competition produced by the existence of abnormally low water rates, and that their competitors still have the same opportunity to use this cheap form of transportation whether the railways reduce their rates or not.

Forum Considers Rail-Motor Competition

Rail transportation vs. truck transportation was the subject of an open forum meeting of the Traffic Club of Chicago on June 1, the speakers being John C. Emery, motor transport editor of the *Railway Age*; C. W. Hester, traffic manager of the Federated Metals Corporation; W. H. Ott, traffic manager of the Kraft-Phoenix Cheese Corporation; and Roy Thompson, traffic manager of the Chicago, North Shore & Milwaukee. The discussions dealt with the adequacy of motor vehicle license fees and gasoline taxes, the damage inflicted upon highways by trucks, recent developments in the taxation of highway vehicles and regulation, and the entrance of railways into highway transport. Mr. Emery spoke in favor of full regulation of highway carriers. He stated that the users of highways should pay the cost of their construction and upkeep, and showed that license fees and gasoline taxes amounted to only 44 per cent of the total highway costs in 1930, the balance being diverted from general taxes. With respect to the need for regulation of highway carriers, he described the chaos in industry which is currently resulting from lack of rate control. He concluded with the statement that only under a system of adequate taxation and regulation can highway transportation be developed to the fullest extent of its possibilities in co-ordination with railway transportation.

Mr. Hester favored regulation of operators of highway vehicles so far as to enable shippers to select reliable concerns, and so as to fix rates and charges and thus eliminate the present chaotic condition. The reasons he gave for shippers using trucks were—demands by customers, fast delivery and low rates. In discussing the railroads' entrance upon highway transport, he said the railroads should

not be permitted to monopolize the trucking industry so as to eliminate competition with smaller operators.

Mr. Ott expressed a shipper's views, contending that transportation by truck is more economical than by rail and that highway cost should be divided between the users and the public. In discussing regulation, he contended that because highway transportation is superior to rail transportation and because it provides a service which cannot be duplicated on the rails, the regulation of truck rates to a parity with rail rates would not eliminate highway transportation since many shippers could not dispense with the service no matter what the cost. He opposed federal regulation of highway carriers and favored more uniform state regulation.

Mr. Thompson described the experience of the Chicago, North Shore & Milwaukee in expanding its service between Chicago and Milwaukee, Wis., to meet the competition of truck operators. A complete account of this road's ferry-truck plan, whereby loaded trucks are handled on flat cars, appeared in the *Railway Age* of May 28, page 916.

I. C. C. Unduly Suspicious

The Interstate Commerce Commission on June 1 issued a press memorandum stating that it had been advised by the Attorney General of his opinion that the facts are not sufficient to justify the institution of proceedings, as requested by the commission, to protest in court against the performance of a contract between the Bandini Estate Company, a subsidiary of the Atchison, Topeka & Santa Fe, and Graham Brothers, a subsidiary of the Chrysler Motor Corporation. The contract provided for the transfer by the Estate company to Graham Brothers of a certain tract of land near Los Angeles, California together with a building which the Estate company agreed to erect thereon, in exchange for certain real estate to be deeded to the Estate company by the Graham company, this real estate being situated near Oakland and Stockton, California, respectively.

The complaint was made according to the memorandum, on the theory that there was a substantial difference in the values of the two properties so to be exchanged and that, therefore, the transaction constituted, in essence, the granting of an unlawful discrimination or concession by the railway company to the Chrysler Motor Corporation. The first item creating this alleged discrepancy was the assumption that the building proposed to be erected at a cost of not to exceed $384,120 would in fact cost somewhere between $600,000 and $1,000,000. After consideration of the evidence, the Attorney General, in a letter dated March 28, 1932, expressed doubt as to the sufficiency of the evidence and requested further investigation by the commission covering certain enumerated items of inquiry. The memorandum continues:

"This commission made an additional investigation and transmitted a detailed statement to the Attorney General. The building referred to has now been nearly completed and its exact cost is known and apparently it will be completed within the contract price of $384,120 and expert opinion can not be asserted successfully to the contrary. This removes one of the chief items of discrepancy upon which the complaint was based.

"The Attorney General, under date of June 1, 1932, advised this commission that after giving consideration to all of the information furnished to his department, and in particular the last data submitted, he is of the opinion that the facts are not sufficient to justify the institution of legal proceedings to enjoin the performance of the contract."

Net Deficit for Three Months $55,803,490

Class I railways of the United States in the first three months of this year had a net deficit, after deduction of interest and other charges, of $55,803,490, as compared with a deficit of $1,693,945 in the corresponding period of last year, according to the Interstate Commerce Commission's compilation of selected income and balance sheet items. The net railway operating income for the three months was $67,276,231 and the other income amounted to $48,561,775. Deductions amounted to $171,641,496. Dividends declared, from income and surplus amounted to $22,851,642, as compared with $64,246,678 in the first three months of last year. For March the net deficit was $6,449,462 as compared with a net income of $10,741,075 in March, 1931.

Further Modifications of Southwestern Rate Scales Proposed

The Interstate Commerce Commission on June 8 made public a voluminous proposed report by Examiners W. J. Koebel and R. G. Taylor recommending a series of 22 findings for modifications of former orders in the consolidated southwestern rate cases, which were re-opened by the commission on June 2, 1930, for further consideration of revisions that might be made necessary to harmonize the scales previously prescribed with those ordered by the commission in the western trunk line class rate revision. The railroads, stating that the southwestern revision had established rates materially lower than those formerly maintained, had objected to any extension into the Southwest of the western trunk line rate-making plan, which they said would produce further sweeping reductions to and from south-

SELECTED INCOME AND BALANCE-SHEET ITEMS OF CLASS I STEAM RAILWAYS IN THE UNITED STATES

Compiled from 160 reports (Form IBS) representing 164 steam railways including 17 switching and terminal companies

TOTALS FOR THE UNITED STATES (ALL REGIONS)†

For the month of March		Income Items	For the three months of	
1932	1931		1932	1931
$33,223,263	$46,590,003	1. Net railway operating income	$67,276,231	$108,898,777
17,791,875	21,121,292	2. Other income	48,561,775	60,175,968
51,015,138	67,711,295	3. Total income	115,838,006	169,074,745
10,923,518	10,892,268	4. Rent for leased roads	32,494,142	32,729,078
44,458,813	44,088,112	5. Interest deductions	132,897,557	131,812,849
2,082,269	1,989,840	6. Other deductions	6,249,797	6,226,763
57,464,600	56,970,220	7. Total deductions	171,641,496	170,768,690
d 6,449,462	10,741,075	8. Net income	*d 55,803,490*	*d 1,693,945*
		9. Dividend declarations (from income and surplus):		
3,803,659	24,465,994	9-01. On common stock	18,086,993	50,851,327
551,047	4,256,747	9-02. On preferred stock	4,764,649	13,395,351

Balance-Sheet Items	Balance at end of March 1932	Balance at end of March 1931
Selected Asset Items		
10. Investments in stocks, bonds, etc., other than those of affiliated companies (Total, Account 707)	$808,553,161	$831,398,004
11. Cash	295,242,207	400,368,754
12. Demand loans and deposits	48,225,492	58,353,387
13. Time drafts and deposits	27,811,237	73,391,339
14. Special deposits	44,389,882	112,720,436
15. Loans and bills receivable	20,780,296	9,667,445
16. Traffic and car-service balances receivable	56,652,549	72,313,780
17. Net balance receivable from agents and conductors	40,702,967	52,801,231
18. Miscellaneous accounts receivable	156,181,029	172,644,554
19. Materials and supplies	374,066,544	437,372,935
20. Interest and dividends receivable	33,649,434	36,694,461
21. Rents receivable	3,467,063	3,984,746
22. Other current assets	6,273,680	8,888,112
23. Total current assets (Items 11 to 22)	$1,107,442,380	$1,439,201,180
Selected Liability Items		
24. Funded debt maturing within six months *	$115,669,931	$178,123,097
25. Loans and bills payable	272,779,940	148,657,286
26. Traffic and car-service balances payable	71,397,767	91,195,492
27. Audited accounts and wages payable	229,264,142	296,124,045
28. Miscellaneous accounts payable	69,783,808	74,496,093
29. Interest matured unpaid	163,094,460	a 175,650,369
30. Dividends matured unpaid	18,963,316	29,669,852
31. Funded debt matured unpaid	51,545,252	40,165,060
32. Unmatured dividends declared	3,410,784	35,433,695
33. Unmatured interest accrued	105,847,840	109,248,215
34. Unmatured rents accrued	27,563,229	27,546,809
35. Other current liabilities	19,461,237	22,156,654
36. Total current liabilities (Items 25 to 35)	$1,033,111,775	$1,050,343,570

† Complete data for the following Class I Railways not available for inclusion in these totals: Canadian National Lines in New England, Canadian Pacific Lines in Maine, and Canadian Pacific Lines in Vermont.

* Includes payments which will become due on account of principal of long-term debt (other than that in Account 764, Funded debt matured unpaid) within six months after close of month of report.

a Includes $28,807,936 unpaid interest accrued by Chicago & Alton R. R., succeeded by The Alton R. R. as of July 19, 1931.

d Deficit.

western territory in rates prescribed as reasonable as recently as April 5, 1927. The examiners recommend a finding that, in view of the defendants' financial condition, the present revenues on the entire traffic under consideration should not be reduced. They also recommend that the maximum reasonable intra and interterritorial rates should be governed by the Western Classification and that for the future class-rate tariffs publishing rates under consideration in this proceeding should contain 26 rate-base scales or columns of rates bearing the percentage relations to class rates indicated in the report. They also proposed that the present percentage relations for the existing ten classes should be continued, except that for class 5 the relation should be reduced from 40 per cent to 37.5 per cent.

Cotton Belt Tariff Suspended

The Interstate Commerce Commission has suspended from June 7 to January 7, 1933, a freight tariff filed by the St. Louis Southwestern proposing to provide for transfer of shipments at carrier's expense between cars on its tracks and the docks, platforms, or doorways of shippers, or to switch the cars at carrier's option, at stopover points on its line. The case has been set for hearing at St. Louis on June 24 before Examiner Maidens.

New Chicago-Jasper Park Train

Coincident with the establishment of reduced summer fares to California by way of the northern routes, the Chicago & North Western, in conjunction with the Canadian National, has established a passenger train, the Jasper Park Special, between Chicago and Jasper National Park, and Vancouver. The train, which goes over the Canadian National from Duluth, leaves Chicago at 5:40 p.m. and arrives at Jasper at 7:40 on the third morning, a schedule of 63 hours; and at Vancouver at 7:25 the fourth morning. Returning, the train leaves Vancouver at 9:50 p.m., Jasper at 9:30 p.m. the next day and arrives in Chicago at 9:30 the fourth morning.

Pacific & Idaho Northern Awarded Increased Divisions

An increase of ten per cent in the divisions received by the Pacific & Idaho Northern out of the interstate joint rates on freight traffic to or from points on its line has been awarded by the Interstate Commerce Commission on a complaint filed by the short line on January 5, 1931, the increase to be taken wholly from the proportion of the joint rates accruing to the lines of the Union Pacific system with which it connects. The commission found that the existing divisions are inequitable. The increase must be applied for the future to the divisions in existence on April 17, 1931, but the application for a retroactive readjustment is denied. Commissioner McManamy, in a concurring opinion, said that the amount awarded is insufficient to meet the financial needs of the short line.

Equipment and Supplies

LOCOMOTIVES

THE MIDLAND CONTINENTAL has ordered one 60-ton gas-electric locomotive from the Whitcomb Locomotive Company, subject to the approval of the Interstate Commerce Commission, the locomotive being similar to that ordered by the Chicago, Burlington & Quincy and described in the *Railway Age* of April 2, page 559.

IRON & STEEL

THE DELAWARE, LACKAWANNA & WESTERN has ordered from the American Bridge Company 160 tons of steel for repairs to a highway over its tracks at Ridgway street, East Stroudsburg, Pa.

FOLEY BROTHERS, INC., New York, who received the general contract from the Long Island, for grade elimination work at Valley Stream, N. Y., let the contract for the necessary steel involving 12,900 tons on June 6, dividing the order as follows: National Bridge Works, 60 per cent and American Bridge Company, 40 per cent.

MOTOR COACHES

THE MAINE CENTRAL TRANSPORTATION COMPANY, subsidiary of the Maine Central, has accepted delivery of three type-V, 29-passenger observation Yellow coaches.

THE BOSTON & MAINE TRANSPORTATION COMPANY, subsidiary of the Boston & Maine, has received three type-Y, 29-passenger Yellow coaches from the General Motors Truck Company, Pontiac, Mich.

THE PENNSYLVANIA GREYHOUND LINES, motor coach operating affiliate of the Pennsylvania, has taken delivery of 55 type-250, 33-passenger observation Yellow coaches from the General Motors Truck Company.

THE RICHMOND GREYHOUND LINES, motor coach operating affiliate of the Richmond, Fredericksburg & Potomac, has received three type-250, 33-passenger observation Yellow coaches from the General Motors Truck Company.

MISCELLANEOUS

THE NEW YORK CENTRAL will receive bids until 12 o'clock noon, Daylight Saving Time, June 21, for the New York Central Lines requirements of steel wheels, for the second half of 1932.

Supply Trade

Karl E. Keiling, sales manager of the **New York Air Brake Company,** has been appointed assistant to the president in charge of sales and service, with headquarters as formerly at New York.

The Chicago Malleable Castings Company, Chicago, has purchased all of the equipment and the right to manufacture and sell the McCord journal box and lid, from the McCord Manufacturing Company, Chicago.

J. E. O'Brien, vice-president and general manager of the railroad department, with headquarters at Chicago, of the **Bird-Archer Company,** New York, has resigned; **S. P. Foster,** who has been connected with the company for the past ten years, as chemical assistant to the president has been appointed to manage the railroad department in the Northwestern territory.

Theodore W. Robinson, vice-president of the **Illinois Steel Company,** Chicago, retired on June 6 under the rules of the United States Steel Corporation, which provide for retirement on a pension at the age of 70. Mr. Robinson will remain with the Steel Corporation in an advisory capacity. He began his business career with the Joliet Steel Company as a chemist and upon the formation of the Illinois Steel Company in 1889 through the consolidation of the Joliet Steel Company and the North Chicago Rolling Mill Company and the Union Iron & Steel Co., was transferred to the Milwaukee works of the Illinois Steel Company in charge of blast furnace operations. Following the organization of the Colorado Fuel & Iron Co., he took charge of the Pueblo works and for a number of years supervised the company's iron and steel manufacturing activities. On his return to the Illinois Steel Company in 1900, he was made general manager and later vice-president.

OBITUARY

Frederick S. Overton, secretary and a director of the Ingersoll-Rand Company, New York, died on June 4. Mr. Overton had been in the service of the company for the past 30 years.

Robert M. Keeney, president of the Pittsburgh Crucible Steel Company and vice-president of the Crucible Steel Company of America, died on June 5, in the Alleghany General Hospital, Pittsburgh, Pa., after an illness of two weeks. He was 48 years old.

Elbert B. Wilson, vice-president and general manager of the Gold Car Heating & Lighting Company, Brooklyn, N. Y., who died at the Presbyterian Hospital, Newark, N. J., on May 31, after a slight operation, was 62 years old. He was born at Dover, N. J., and received his early training in the Dela-

ware, Lackawanna & Western shops in that city. Mr. Wilson had been in the service of the Gold Car Heating & Lighting Company for about 35 years, and for a long time was a member of the New York Railroad Club.

James A. Burden, president of the Burden Iron Company, Troy, N. Y., died suddenly on June 1, at his home at Syosset, N. Y. Mr. Burden was born on January 16, 1871, in New York. He was graduated from Harvard University in 1893, and for a year studied law at Harvard Law School. In 1894 he was elected a director of the Burden Iron Company, and in 1906 he succeeded his father as president of the same company. During the World War he was a member of the co-operative committee on steel and steel products, advisory commission, Council

James A. Burden

of National Defense. Mr. Burden was also chairman of the board of the Hudson Valley Coke & Products Corporation and a director of the United National Bank of Troy. He was a member of a number of technical organizations and clubs including the Iron & Steel Institute.

Frank W. Edmunds, the well-known veteran secretary-treasurer of the Signal Appliance Association and president, Craft, Inc., died suddenly on June 3 while travelling on a subway train in Brooklyn, N. Y. Mr. Edmunds was born on September 5, 1858, at Boston, Mass. After graduating from school he began work as an office boy and later served as salesman for J. A. Griswold & Company. He then served consecutively as sales manager for the Albany & Rensselaer Iron & Steel Company; sales manager, secretary and treasurer of the Troy Steel & Iron Company. He subsequently was a representative of the Pennsylvania Steel Company and later sales manager of the Dressel Railway Lamp Works, New York. In June, 1918, he resigned from the Dressel Company to become eastern sales manager of the Sunbeam Electric Manufacturing Company, retiring from the latter position in December, 1924. Mr. Edmunds was president of Craft, Inc., in May, 1926, when he was appointed eastern sales manager of the Boss Bolt & Nut Works and since 1927, he was also a special representative of Thomas A. Edison, Inc., Bloomfield, N. J. Mr. Edmunds had served for many years on various

Frank W. Edmunds

committees of the Railway Supply Manufacturers' Association and other manufacturing Associations connected with the railway supply industry, and had been for a quarter of a century secretary-treasurer of the Signal Appliance Association. He had been active in civic affairs, having served as president of the West Nyack Board of Education and also was a member of a number of clubs.

Construction

CANADIAN NATIONAL.—This company has received authority from the Dominion Board of Railway Commissioners to carry out a grade revision on the line of the former National Transcontinental, between mileposts 38.3 and 42.7, Cochrane division. The work involves the relocation or abandonment of certain station facilities in the vicinity of Joybert, Que., Windigo and Flamand, and the construction of a bridge over the Flamand river.

LEHIGH & NEW ENGLAND.—This road has awarded to F. H. Clement & Company, of Bethlehem, Pa., a contract for the construction and erection of a four-span steel and concrete railroad bridge over Bushkill creek, on the Martins Creek branch, at Stockertown, Pa. This work involves a capital expenditure of $15,000.

MISSOURI PACIFIC.—This company has awarded a contract to Fairbanks, Morse & Company, Chicago, for the erection of steel in connection with the construction of a locomotive coaling station of 50-tons' capacity, with automatic conveyor type machinery, at Ordway, Colo.

NEW YORK CENTRAL.—The Public Service Commission of New York has designated for elimination grade crossings of this company's tracks with Ford road and with the Barre Center-Elba highway, both crossings being located in Elba, N. Y. The Ford road crossing will be eliminated by construction of a highway underpass, while the Barre Center-Elba highway is to be elevated and carried over the grade of the railroad.

NORTHERN PACIFIC.—This company has awarded a contract to J. C. Boespflug for the construction of a subway at Milwa City, Mont., to carry Main street under three tracks at a cost of $80,000. The work will involve the erection of a 50-ft. steel I-beam span on concrete abutments with a 30-ft. roadway and two six-ft. sidewalks through box type abutments.

TEXAS PACIFIC-MISSOURI PACIFIC TERMINAL RAILROAD OF NEW ORLEANS.—The contract for the construction of the substructure for a double-track bascule bridge across the Intracoastal canal at Harvey, La., has been awarded to Thomas H. Brockman, New Orleans, La., at a cost of $71,290.

Financial

ATCHISON, TOPEKA & SANTA FE.—*Leases.*—The Atchison, Topeka & Santa Fe has been authorized by the Interstate Commerce Commission to acquire control by lease of the Barton County & Santa Fe, which it controls by ownership of capital stock. The lessor's line extends from Holyrood, Kan., westward to Galatia, 31.2 miles. The Atchison, Topeka & Santa Fe has likewise been authorized to lease the Buffalo Northwestern, another controlled company extending from Waynoka, Okla., westward to Buffalo, 51.4 miles, and of the Kansas Southwestern, extending from Arkansas City, Kan., westward to Anthony, 59.3 miles.

BLYTHEVILLE, LEACHVILLE & ARKANSAS SOUTHERN.—*Final Recapture Report.*—The Interstate Commerce Commission has issued a final report directing this company to pay $30,305 to its general railroad contingent fund as representing half its excess net railway operating income for 1922 and 1924.

CHICAGO & EASTERN ILLINOIS.—*Number of Directors Reduced.*—The board of directors of this road were reduced from 15 to 12 members at the annual meeting of stockholders on June 1. The vacancies caused by the resignation of J. J. Pulleyn, of New York, and J. W. Stedman, of Newark, N. J., and the death of William J. Jackson, former president, were not filled.

CHICAGO, BURLINGTON & QUINCY.—*Reduces Dividend.*—The directors of this company have reduced the semi-annual dividend from $5 to $3.

CHICAGO, INDIANAPOLIS & LOUISVILLE.—*Notes.*—The Interstate Commerce Commission has authorized this company to issue $602,275 of promissory notes to evidence a loan for a like amount to be used in the payment of interest on its debt, the funds for this purpose to be furnished by the Railroad Credit Corporation.

CHICAGO, NORTH SHORE & MILWAUKEE.—*Securities.*—The Interstate Commerce

Commission has authorized this company to issue $2,722,000 of first and refunding mortgage bonds, series C, upon the surrender of an equal amount of series B bonds and to issue $2,750,000 of notes in payment for a like amount of outstanding notes. The previously issued securities were issued without the approval of the Interstate Commerce Commission, the company contending that it was an interurban electric railway and did not come under the provisions of Section 20a of the Interstate Commerce Act. This view was sustained by the Federal Court for the Northern district of Illinois but, pending final decision by the Supreme Court, the company decided to apply for I. C. C. authority in order that there be no doubt concerning the validity of the securities.

CINCINNATI UNION TERMINAL.—*R. F. C. Loan.*—This company has applied to the Interstate Commerce Commission and the Reconstruction Finance Corporation for a loan of $11,000,000 to provide funds for continuing construction work on its terminal in Cincinnati. It offered to deposit its first mortgage bonds as collateral.

COLORADO & SOUTHERN.—*Postpones Dividend Action.*—Directors meeting on June 2 took no action on the semi-annual dividend of $2 due on its first preferred stock.

DULUTH, MISSABE & NORTHERN.—*Proposed Recapture Report.*—Examiner Woodrow of the Interstate Commerce Commission has submitted a proposed report finding that this company in the years 1920 to 1923 earned $14,866,371 in excess of 6 per cent on the value of its property, of which one-half would be recapturable. This is based on a finding of a value of $65,100,000 for 1920 and $60,100,000 for 1923.

FONDA, JOHNSTOWN & GLOVERSVILLE.—*R. F. C. Loan.*—At the request of the company the Interstate Commerce Commission has dismissed its application for a loan from the Reconstruction Finance Corporation. The original application was for $315,500 but it was subsequently reduced to $179,250 and then withdrawn.

GREAT NORTHERN.—*Supreme Court To Review Guaranty Claim.*—The Supreme Court of the United States on May 31 granted the petition of the Department of Justice for a review of the decision of the circuit court of appeals for the eighth circuit which had denied the right of the United States to recover from the Great Northern the amount of the difference of $1,329,785, including interest, between the amount paid to the company in partial payments as representing its guaranty for the six-months period following the termination of federal control in 1920 and the amount finally determined by the Interstate Commerce Commission. The commission had allowed the company $12,500,000 in partial payments and later fixed the amount at $11,170,214. The lower court held that after the commission had certified the amounts due it was not entitled to claim a refund on the basis of a change in the method of determining the amount.

ILLINOIS CENTRAL.—*R.F.C. Loan.*—This company has applied to the Interstate Commerce Commission and the Reconstruction Finance Corporation for a loan of $11,000,000, to be reduced to $3,534,000 if the Railroad Credit Corporation approved the loan of $7,466,000 for which it has applied to meet its interest requirements. The additional amount asked from the government is to meet maturities in July, August, and October.

MAINE CENTRAL.—*Bonds.*—The Interstate Commerce Commission has authorized this company to procure the authentication and delivery of $916,000 of its 6 per cent first mortgage bonds to be pledged as collateral security for a loan from the R. F. C.

MINNEAPOLIS & ST. LOUIS.—*Protective Committee Formed.*—A protective committee has been formed to represent holders of the first mortgage extended 6 per cent bonds of this company on which payment of principal was defaulted June 1. This action was taken following the failure of the R. F. C. to approve a loan to the receivers to permit the meeting of this maturity, pending the working out of a satisfactory plan of reorganization. Edward C. Delafield, vice-president, City Bank Farmers Trust Company of New York, is chairman of the committee.

MINNEAPOLIS & ST. LOUIS.—*R.F.C. Loan.*—W. H. Bremner, receiver, has applied to the Interstate Commerce Commission for a re-opening and reconsideration of his application for a loan of $3,898,629 from the Reconstruction Finance Corporation in so far as the commission failed to approve $1,200,000 of the amount asked for payment of receiver's certificates. The commission on April 30 approved a loan of $2,898,629 for the purpose of paying off a bond issue of $950,000 and $1,748,629 of preferred claims outstanding but the application for reopening says the Finance Corporation has refused to make the loan for the reason, among others, that the effect would be to dilute the security of the holders of outstanding receiver's certificates. Mr. Bremner asked that the $1,200,000 be approved for the purpose of paying off that amount of certificates, saying that the corporation would then be amply secured for the amount of the entire loan applied for.

MINNEAPOLIS, ST. PAUL & SAULT STE. MARIE.—*R. F. C. Loan.*—This company has filed with the Interstate Commerce Commission a supplemental application for a loan from the Reconstruction Finance Corporation reducing the amount requested from $10,000,000 to $5,000,000 and the term from three years to two years. The company had originally applied for a loan of $15,329,608 and the commission on February 25 had approved a loan of $2,300,000 of the amount, part of which was to be taken up by the Railroad Credit Corporation. In its later amended application the company states that the present holders of its notes have agreed to accept one-half in cash and one-half in two-year six per cent notes. As collateral for the $5,000,000 loan it offers to pledge $6,250,000 of first refunding mortgage bonds and its notes would be guaranteed by the Canadian Pacific.

MOBILE & OHIO.—*Receivership.*—Ernest E. Norris, executive vice-president of the Mobile & Ohio, was appointed receiver by Federal Judge Charles B. Faris at St. Louis, Mo., on June 3, following a suit for receivership filed on June 2 by Gatch, Tennant & Co., a St. Louis insurance firm, which listed an over-due debt of $6,853 for premiums on insurance issued to the railroad. The railroad, in an answer filed to the suit, admitted allegations of financial distress contained in the suit and joined in the petition for the appointment of a receiver. The outstanding indebtedness of the road was given in the suit as $38,230,048. It was set forth that fixed charges of $975,760 will become due on or before September 26 and that the road has defaulted in the payment of $59,200 taxes and that creditors have obtained judgments for $137,000. Figures were given to show that the road had operated at a loss of approximately $3,708,000 since the first of 1930. Division 4 of the Interstate Commerce Commission had approved a loan of $1,000,000 by the Reconstruction Finance Corporation to the Mobile & Ohio on April 21, but the application for the loan was withdrawn before its report was served. Upon being advised of the approval S. R. Prince, general counsel of the Southern and of the Mobile & Ohio asked that service be withheld pending consideration of the matter of withdrawal, and later, on June 1, he asked that the application be withdrawn. The report by Division 4 had required that $3,000,000 of Southern development and general mortgage 4 per cent bonds be deposited as collateral. The Southern had previously applied to the commission for authority to loan $2,000,000 of such bonds to the Mobile & Ohio for use as collateral. On February 25 the commission had approved a loan of $785,000 to the Mobile & Ohio as a temporary advance to meet interest requirements and to be taken up by the Railroad Credit Corporation. Before passing on the original application for a loan of $785,000 the commission had suggested a requirement that it be guaranteed by the Southern, but Mr. Prince had taken the position that the Southern could not well do so and referred to the fact that there is pending a complaint by the commission challenging the Southern's control of the Mobile & Ohio as a violation of the Clayton anti-trust law. In approving the loan the commission omitted such a requirement. In its application filed March 18 for the loan of $1,000,000 the Mobile & Ohio listed among its requirements an item of $849,468 due to the Southern. The commission on June 8 formally dismissed the $1,000,000 application.

Fairfax Harrison, president of the road, attributed its difficulties to the competition of highway vehicles and barge line competition. Governmental subsidies to the M. & O.'s competitors are thus the principal cause of its troubles and it is not the only railroad in its territory which is suffering from this injustice. The road is controlled by the Southern, by ownership

of a majority of its stock and general mortgage 4 per cent bonds (in which latter the voting power is lodged). In 1929 holders of Southern Railway-M. & O. 4 per cent stock trust certificates filed suit against the trustees of the mortgages and deeds under which the Southern acquired control of the M. & O. in 1901 seeking cancellation of the exchange of M. & O. stock certificates for the Southern-M. & O. certificates made at that time. This suit is still pending.

OKLAHOMA & RICH MOUNTAIN.—*R.F.C. Loan.*—The Interstate Commerce Commission on May 26 denied its approval of this company's application for a loan of $33,296 from the Reconstruction Finance Corporation to discharge its indebtedness to the Dierks Lumber & Coal Company which owns the stock of the railroad.

OLD COLONY.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to issue $1,500,000 of first mortgage 20-year bonds, to refund $1,000,000 of debentures maturing July 1 and to pay for permanent improvements made to its property by the New York, New Haven & Hartford.

PENNSYLVANIA.—*Securities.*—The New York Bay has applied to the Interstate Commerce Commission for authority to issue $11,706,000 of first mortgage 5 per cent bonds and $3,811,250 of capital stock to be delivered to the Pennsylvania in partial reimbursement for advances.

PEORIA & EASTERN.—*Annual Report.*—The 1931 annual report of this company shows net income after interest and other charges of $23,242, as compared with net income of $58,237 in 1930. Selected items from the Income Statement follow:

	1931	1930	Increase or Decrease
Average Mileage Operated	211.44	211.44	.....
RAILWAY OPERATING REVENUES	$2,702,787	$3,554,900	—$852,112
Maintenance of way	330,578	482,383	— 151,806
Maintenance of equipment	527,340	784,814	— 257,474
Transportation	1,224,128	1,527,020	— 302,892
TOTAL OPERATING EXPENSES	2,317,032	3,044,741	— 727,708
Operating ratio	85.73	85.65	+ .08
NET REVENUE FROM OPERATIONS	385,755	510,159	— 124,404
Railway tax accruals	208,673	230,431	— 21,758
Railway operating income	176,115	279,208	— 103,093
Equipment rents, Net Dr.	114,970	171,337	— 56,367
Joint facility rents, Net Dr.	61,756	73,865	— 12,108
NET RAILWAY OPERATING INCOME	* 611	34,005	— 34,617
Non-operating income	42,089	41,890	+ 198
GROSS INCOME	41,477	75,896	— 34,419
TOTAL DEDUCTIONS FROM GROSS INCOME	18,235	17,659	+ 576
NET INCOME	23,242	58,237	— 34,995

* Deficit.

PERE MARQUETTE.—*Annual Report.*—The 1931 annual report of this company shows net deficit after interest and other charges of $1,863,081, as compared with net income of $2,015,016 in 1930. Selected items from the Income Statement follow:

	1931	1930	Increase or Decrease
Average Mileage Operated	2,264.90	2,252.95	+ 11.95
RAILWAY OPERATING REVENUES	$27,344,681	$37,216,378	—$9,871,697
Maintenance of way	4,579,837	5,369,883	— 790,046
Maintenance of equip't	5,395,088	7,602,894	— 2,207,805
Transport'n	10,960,999	13,783,063	— 2,822,064
TOTAL OPERATING EXPENSES	23,132,174	29,030,270	— 5,898,096
Operating ratio	84.59	78.00	+ 6.59
NET REVENUE FROM OPERATIONS	4,212,507	8,186,108	— 3,973,601
Railway tax accruals	1,745,196	1,942,719	— 197,524
Railway operating income	2,460,172	6,232,583	— 3,772,412
Equipment rents, Net	538,034	971,033	— 432,999
Joint facility rents, Net	637,573	720,386	— 82,813
NET RAILWAY OPERATING INCOME	1,284,565	4,541,164	— 3,256,599
GROSS INCOME	1,891,391	5,101,916	— 3,210,525
Rent for leased roads	98,878	92,165	+ 6,713
Interest on debt	3,596,037	2,932,399	+ 663,638
TOTAL DEDUCTIONS FROM GROSS INCOME	3,754,472	3,086,901	+ 667,571
NET INCOME	*$1,863,081	$2,015,016	—$3,878,097

* Deficit.

PITTSBURGH & LAKE ERIE.—*Annual Report.*—The 1931 annual report of this company shows net income after interest and other charges of $3,072,687, as compared with net income of $6,510,199 in 1930. Selected items from the Income Statement follow:

	1931	1930	Increase or Decrease
Average Mileage Operated	234.90	232.01	+ 2.89
RAILWAY OPERATING REVENUES	$17,836,549	$27,341,198	—$9,504,649
Maintenance of way	1,645,818	2,893,072	— 1,247,254
Maintenance of equipt.	5,494,491	7,812,470	— 2,317,979
Transport'n.	7,023,371	9,319,353	— 2,295,982
TOTAL OPERATING EXPENSES	15,518,775	21,530,952	— 6,012,177
Operating ratio	87.01	78.75	+ 8.26
NET REVENUE FROM OPERATIONS	2,317,774	5,810,246	— 3,492,472
Railway tax accruals	1,138,723	1,693,586	— 554,863
Railway operating income	1,178,626	4,116,422	— 2,937,795
Equipment rents, Net Cr.	2,182,496	3,391,537	— 1,209,041
Joint facility rents, Net Dr.	84,810	134,839	— 50,029
NET RAILWAY OPERATING INCOME	3,276,312	7,373,119	— 4,096,807
Non-operating income	1,184,732	1,280,642	— 95,911
GROSS INCOME	4,461,044	8,653,762	— 4,192,717
Rent for leased roads	572,769	590,315	— 17,546
Interest on funded debt	111,682	131,497	— 19,815
TOTAL DEDUCTIONS FROM GROSS INCOME	1,388,358	2,143,563	— 755,205
NET INCOME	3,072,687	6,510,199	— 3,437,512

PITTSBURGH & WEST VIRGINIA.—*Bonds.*—The Interstate Commerce Commission has authorized this company to issue $7,446,000 of its general mortgage 6 per cent bonds, such portion as may be required to be pledged as collateral security for a loan from the R. F. C. and the remainder to be held in the company's treasury.

RUTLAND.—*Annual Report.*—The 1931 annual report of this company shows net deficit after interest and other charges of $101,128, as compared with net income of $274,521 in 1930. Selected items from the Income Statement follow:

	1931	1930	Increase or Decrease
RAILWAY OPERATING REVENUES	$4,541,812	$5,286,186	—$744,374
Maintenance of way	889,651	952,734	— 53,083
Maintenance of equipment	880,133	1,045,559	— 165,425
Transportation	1,964,242	2,132,326	— 168,084
TOTAL OPERATING EXPENSES	4,076,185	4,484,491	— 408,306
Operating ratio	89.75	84.83	+ 4.93
NET REVENUE FROM OPERATIONS	465,627	801,695	— 336,068
Railway tax accruals	268,424	274,297	— 5,873
Railway operating income	197,125	526,952	— 329,826
Equipment rents, Net Cr.	16,719	15,553	+ 1,166
Joint facility rents, Net Cr.	40,397	63,635	— 23,238
NET RAILWAY OPERATING INCOME	254,242	606,140	— 351,898
Non-operating income	94,029	108,601	— 14,571
GROSS INCOME	348,272	714,741	— 366,469
Rent for leased roads	19,000	19,000	.....
Interest on funded debt	409,241	411,991	— 2,750
TOTAL DEDUCTIONS FROM GROSS INCOME	449,399	440,220	+ 9,180
NET DEFICIT	101,128	274,521 (Cr.)	375,649

ST. LOUIS-SAN FRANCISCO.—*Annual Report.*—The 1931 annual report of this company shows net deficit after interest and other charges of $3,255,763, as compared with net income of $5,621,536 in 1930. Selected items from the Income Statement follow:

	1931	1930	Increase or Decrease
Average Mileage Operated	5,889.64	5,837.18	+ 52.46
RAILWAY OPERATING REVENUES	$57,112,998	$74,208,767	—$17,095,769
Maintenance of way	6,661,241	9,529,861	— 2,868,620
Maintenance of equip't	10,476,840	12,890,524	— 2,413,684
Transpor'n	20,945,057	26,069,558	— 5,124,501
TOTAL OPERATING EXPENSES	42,527,366	‡52,943,580	— 10,416,214
Operating ratio	74.46	71.34	+ 3.12
NET REVENUE FROM			

	1931	1930	Increase or decrease
Operations	14,585,633	21,265,188	— 6,679,555
Railway tax accruals	*4,308,717	‡4,356,185	— 47,470
Equipment rents, Net	621,473	144,916	+ 476,557
Joint facility rents, Net	207,374	186,131	+ 21,243
Net Railway Operating Income	9,435,502	16,565,641	— 7,130,139
Non-operating income	776,283	1,993,856	— 1,217,573
Gross Income	10,211,785	18,559,497	— 8,347,712
Total Deductions from Gross Income	137,056	153,846	— 16,790
Net Income	†$3,255,763	$5,621,536	—$8,877,299

† Deficit.
‡ Items in 1930 income account marked thus include credits totaling approximately $500,000 relating to prior years.
* Items in 1931 income account marked thus include credit totaling approximately $500,000 relating to prior years.

Southern Pacific.—*Bonds.*—This company has applied to the Interstate Commerce Commission for authority to pledge $35,646,106 of bonds of the Central Pacific held in its treasury as collateral for short-term bank loans.

Southern Pacific.—*Liability as Guarantor.*—The Interstate Commerce Commission has authorized this company to assume liability as guarantor for notes not exceeding $18,000,000 issued by the St. Louis Southwestern to the Reconstruction Finance Corporation.

Texas, Oklahoma & Eastern.—*R.F.C. Loan.*—The Interstate Commerce Commission on May 26 denied approval of this company's application for a loan of $217,477 from the Reconstruction Finance Corporation to discharge indebtedness to the Choctaw Lumber Company, a subsidiary of the Dierks Lumber & Coal Company which owns a majority of the stock of the railroad. The commission held that it was unable to find that the loan would be adequately secured.

Western Pacific.—*R.F.C. Loan.*—This company has applied to the Interstate Commerce Commission and the Reconstruction Finance Corporation for an additional loan of $759,000 for work on the construction of branch lines, miscellaneous current obligations and taxes.

Dividends Declared

Atchison, Topeka & Santa Fe.—Preferred, $2.50, semi-annually, payable August 1 to holders of record June 30.

Chesapeake & Ohio.—Common, 2½ per cent, quarterly; 6½ per cent Preferred Series A, $3.25, quarterly, both payable July 1 to holders of record June 8.

Chicago, Burlington & Quincy.—$3.00, semi-annually, payable June 25 to holders of record June 18.

Colorado & Southern.—Dividend Omitted on First Preferred.

New York & Harlem.—Common, $2.50; Preferred, $2.50, both payable July 1 to holders of record June 15.

Old Colony.—1¾ per cent, quarterly, payable July 1 to holders of record June 18.

Average Prices of Stocks and of Bonds

	June 7	Last week	Last year
Average price of 20 representative railway stocks..	14.20	11.83	64.01
Average price of 20 representative railway bonds..	53.16	44.93	90.38

Railway Officers

EXECUTIVE

H. N. Rodenbaugh, chief operating and traffic officer of the Florida East Coast, with headquarters at St. Augustine, Fla., resigned, effective June 1.

OPERATING

R. W. Simpson, assistant general manager of the Atlantic region of the Canadian National, retired effective June 1.

P. G. Russell, assistant superintendent on the Canadian National, with headquarters at Smithers, B. C., has been assigned to other duties and his position abolished.

G. F. Linster, assistant superintendent of telegraph for the St. Louis-San Francisco, with headquarters at Springfield, Mo., has been assigned to other duties and his position abolished.

M. M. Cronk, assistant superintendent on the Pere Marquette, with headquarters at Grand Rapids, Mich., has been appointed trainmaster at the same point, to succeed **C. L. McGrain,** who has been assigned to other duties.

W. E. Haist, assistant superintendent on the Chicago, Burlington & Quincy, with headquarters at Beardstown, Ill., has been appointed assistant to the general manager of the Lines East of the Missouri river, to replace **W. A. Card,** whose death on May 29 was noted in the *Railway Age* of June 4. **F. L. Goodman,** trainmaster, with headquarters at Galesburg, Ill., has been appointed acting assistant superintendent at Beardstown to succeed Mr. Haist.

H. H. Smith, superintendent of the Oregon division of the Railway Express Agency, with headquarters at Portland, Ore., has been transferred to the Washington-Alaska-Yukon division, with headquarters at Seattle, Wash., following the abolition of the Oregon division and its absorption by other divisions. Mr. Smith succeeds **W. F. Haynie,** who has been transferred to the Intermountain division, with headquarters at Salt Lake City, Utah, to succeed **R. A. Cox.** Mr. Cox has been transferred to the Northern California-Nevada division, which hereafter will be known as the Northern California-Nevada-Oregon division, with headquarters at Sacramento, Cal., succeeding **E. E. McMichael,** who has retired. The headquarters of **J. C. North,** superintendent of the Montana division, have been transferred from Great Falls, Mont., to Spokane, Wash.

MECHANICAL

C. A. Gill, formerly superintendent of motive power, Eastern lines, of the Baltimore & Ohio, has been appointed assistant to chief motive power and equipment, same road, following his return from a year's leave of absence during which he served as chief consulting engineer of the government-operated railroad system of the Union of Socialistic Soviet Republics.

TRAFFIC

W. T. Stringer has been appointed coal manager of the Western Maryland, with headquarters at Baltimore, Md.

W. H. Arnold, commercial agent for the Missouri Pacific at Chicago, has been promoted to general agent at Minneapolis, Minn., to succeed **R. B. Wilson,** who has retired.

T. E. Harris, who recently was appointed head of the foreign traffic department of the Illinois Central, with headquarters at Chicago, has been given the title of manager of foreign trade traffic.

Pennsylvania Traffic Department Changes

J. L. Eysmans, vice-president, traffic, of the Pennsylvania, has announced a general re-organization of the P. R. R. traffic department, effective on June 1. Coincident with this re-organization, the changes which are listed in the following table have taken place among traffic officers of that road.

Headquarters	Name	Present Position	Former Position
Philadelphia, Pa.	C. B. Sudborough	general traffic manager	asst. vice-president
	J. B. Large	asst. general traffic manager	general freight traffic manager
	W. S. Yeatts	asst. to general traffic manager	asst. freight traffic manager
	W. L. Buchanan	milk traffic agent	same
	H. T. Wilkins	manager of railroad exhibits	
	John Yocum	manager express traffic	same
	A. J. Ball	general foreign freight agent	foreign freight traffic manager
	A. B. Cooper	foreign freight agent	same
New York	J. W. Roberts	perishable traffic manager	asst. vice-president
	Passenger Traffic Department		
Philadelphia	C. H. Mathews, Jr.	passenger traffic manager	general passenger traffic manager
	F. W. Conner	asst. passenger traffic manager	passenger traffic manager
	F. McD. Quinn	general passenger agent	asst. to general traffic manager—passenger
	W. E. Blachley	asst. general passenger agent	general passenger agent
	C. W. Getty	asst. general passenger agent	same
	A. A. Brown	general baggage agent	same
	D. M. Becker	division passenger agent	
	A. E. Buchanan	special representative of the general passenger agent	asst. general passenger agent

Headquarters	Name	Present Position	Former Position
		Passenger Traffic Department—*(Continued)*	
New York	A. H. Shaw	general passenger agent	passenger traffic manager
	C. C. Trueb	asst. general passenger agent	same
	M. N. Luthi	division passenger agent	
	H. Opperman, Jr.	foreign passenger agent	
	Wm. Pedrick, Jr.	special representative of general passenger agent	asst. to general traffic manager—passenger
	P. H. Woodward	special representative of general passenger agent	general passenger agent
Baltimore, Md.	I. B. Yeakle	division passenger agent	
Washington, D. C.	A. B. Smith	general passenger agent	same
	H. A. Karr	division passenger agent	
Atlantic City, N. J.	J. S. Murphy	division passenger agent	
Harrisburg, Pa.	N. S. Longaker	division passenger agent	
Pittsburgh, Pa.	R. M. Flocker	general passenger agent	passenger traffic manager
	W. A. Phillips	asst. general passenger agent	general passenger agent
	L. F. Entrikin	division passenger agent	asst. general passenger agent
	S. L. Shank	district passenger agent	
Buffalo, N. Y.	S. B. Newton	division passenger agent	
Cleveland, Ohio	E. M. Holt	division passenger agent	asst. general passenger agent
Columbus, Ohio	T. M. Goldsborough	division passenger agent	
Chicago	C. E. McCullough	general passenger agent	passenger traffic manager
	C. G. Pennington	asst. general passenger agent	general passenger agent
	R. C. Caldwell	division passenger agent	
St. Louis, Mo.	F. A. Bauchens	asst. general passenger agent	general passenger agent
	R. M. Harvey	division passenger agent	asst. general passenger agent
Detroit, Mich.	E. M. Presley	division passenger agent	
Indianapolis, Ind.	J. C. Millspaugh	division passenger agent	
Cincinnati, Ohio	F. M. Ware	division passenger agent	asst. general passenger agent
Louisville, Ky.	L. G. Russell	district passenger agent	
Toledo, Ohio	J. M. Harris	special representative of the general passenger agent	asst. to general passenger agent
	F. E. Penn, Jr.	district passenger agent	
		Coal Traffic Department	
Philadelphia	J. T. Carbine	coal traffic manager	asst. general traffic manager—freight
	C. H. Lippincott	general coal freight agent	coal traffic manager
	A. S. Jennings	coal freight agent	same
Pittsburgh	J. B. McCorkle	general coal freight agent	coal traffic manager
	J. H. Cross	coal freight agent	coal and ore agent
		Freight Traffic Department—Eastern Region	
Philadelphia	C. T. Mackenson, Jr.	freight traffic manager	asst. general traffic manager—freight
	E. S. Neilson	asst. freight traffic manager	freight traffic manager
	V. P. Sumerfield	asst. freight traffic manager	same
	W. C. Glynn	asst. freight traffic manager	asst. to general traffic manager
	W. B. Hopkins	general freight agent	same
	W. W. Finley, Jr.	general freight agent	same
	W. S. Thomas	asst. general freight agent	same
	Fred Carpi	asst. general freight agent	traffic engineer
	C. J. Quinn, Jr.	division freight agent	
	G. E. Fetterman	industrial agent	
	B. K. Wimer	asst. industrial agent	
	R. R. Blydenburgh	special representative	asst. general freight agent
	W. H. H. Willis	special representative	asst. to asst. freight traffic manager
	E. W. Fisher	commerce agent	coal freight agent
New York	F. X. Quinn	general freight agent	freight traffic manager
	W. K. Emery	division freight agent	general freight agent
	W. L. Newberrey	foreign freight agent	same
	Donald Wilson	district industrial agent	asst. general freight agent
Norfolk, Va.	R. B. Cooke	general freight & passenger agent	same
Baltimore	H. M. Phillips	division freight agent	
	Walter Allison	foreign freight agent	same
Camden, N. J.	M. C. Broughton	division freight agent	
Harrisburg	V. C. Kline	division freight agent	
Williamsport, Pa.	H. Sumerfield	division freight agent	
Wilmington, Del.	G. R. Richardson	division freight agent	asst. general freight agent
Altoona, Pa.	N. F. Carter	district freight agent	
Reading, Pa.	L. S. Weber	district freight agent	
		Freight Traffic Department—Central Region	
Pittsburgh	H. C. Oliver	freight traffic manager	traffic manager
	V. C. Williams	asst. to freight traffic manager	asst. freight traffic manager
	W. M. Pomeroy	general freight agent	freight traffic manager
	R. H. Miller	asst. general freight agent	general freight agent
	E. B. Hankey	division freight agent	asst. general freight agent
	H. H. Gray	division freight agent	asst. general freight agent
	E. J. Israel, Jr.	industrial agent	
	G. W. Koonce	asst. industrial agent	
Buffalo	W. C. Sommers	division freight agent	asst. general freight agent
Cleveland	R. J. Wood	division freight agent	
Columbus	G. A. Sargent	division freight agent	
Youngstown, Ohio	J. A. Sonnhalter	division freight agent	
Erie, Pa.	Geo. Berg	division freight agent	
Uniontown, Pa.	M. H. MacQuown	division freight agent	
Canton, Ohio	N. B. Fagan	district freight agent	
Wheeling, W. Va.	E. D. Ziegler	district freight agent	
		Freight Traffic Department—Western Region	
Chicago	J. E. Weller	traffic manager	asst. vice-president
	W. R. Cox	freight traffic manager	traffic manager
	S. C. Matthews	asst. freight traffic manager	same
	J. T. Johnston	general freight agent	freight traffic manager
	F. W. Nash	asst. general freight agent	same
	W. P. Veit	asst. general freight agent	general freight agent
	G. A. Hill	division freight agent	asst. general freight agent
	E. W. Saville	foreign freight agent	division freight agent
	R. W. Cooke	industrial agent	general freight agent
	W. H. Johnson	special representative	general freight agent
	G. O. Hultgren	district freight agent	
St. Louis	C. E. Clapp	asst. general freight agent	same
	B. H. Dally	special representative	general freight agent
Detroit	T. W. Preston	division freight agent	general freight agent
Indianapolis	H. A. Koch	division freight agent	
Louisville	J. T. Wray	division freight agent	
Toledo	E. Plummer	division freight agent	
Cincinnati	F. G. Schoettler	division freight agent	
Grand Rapids, Mich.	T. A. McMillen	division freight agent	
Fort Wayne, Ind.	A. E. Johnston	division freight agent	
South Bend, Ind.	F. S. Montgomery	district freight agent	
Richmond, Ind.	W. J. Baar	district freight agent	

ENGINEERING AND SIGNALING

R. O. Rote, chief engineer of the New York Central, Lines West of Buffalo, with headquarters at Cleveland, Ohio, has had his jurisdiction extended to include the maintenance of way and signal departments.

With the exception of **Col. F. G. Jonah,** chief engineer, the engineering department of the St. Louis-San Francisco, including the offices of **H. B. Barry,** assistant chief engineer, **E. B. Hennessy,** bridge engineer and **R. C. Stephens,** architect, have been moved from St. Louis, Mo., to Springfield.

OBITUARY

Charles N. Fisher, general agent in the passenger department of the Chicago, Rock Island & Pacific, at San Francisco, Cal., died on May 27.

Henry C. Gillespie, master mechanic of the Huntington division of the Chesapeake & Ohio, died of pneumonia at Huntington, W. Va., on May 23, following a brief illness.

C. E. Ingersoll, president of the Midland Valley, died at Philadelphia, Pa., of a heart attack after a long illness, on June 6. Mr. Ingersoll was 72 years old.

Harry H. Reed, formerly treasurer of the Newburgh, Dutchess & Connecticut, later absorbed by the Central New England (now a part of the New York, New Haven & Hartford), died at his home in Beacon, N. Y., on June 2. For the past 27 years Mr. Reed had been connected with the treasurer's office of the New York Central.

E. T. Kennan, superintendent of car service of the Pennsylvania, died after a brief illness on June 3, at his home in Germantown, Pa. Mr. Kennan was 58 years old. He commenced railroad service with the Valley Railway of Ohio (now part of the Baltimore & Ohio) in 1893, following his graduation from Caton College in Cleveland. In 1916, he became assistant superintendent of car service of the Pennsylvania, Lines West of Pittsburgh, and was made superintendent there the next year. Following the World War he returned to the Pennsylvania as superintendent of car service for the entire system.

The Ludington Air Lines plan to inaugurate non-stop high-speed passenger service between New York and Washington four times a day in each direction on schedules of 80 minutes (224 miles by rail). This is an addition to the regular flights, hourly, from 7 a.m. to 6 p.m. with stops at Philadelphia and Baltimore. The new service is to be conducted with "Fleetster" single-engine monoplanes. The company says in its advertisements that in the last 20 months the New York-Washington planes have carried more than 100,000 passengers.

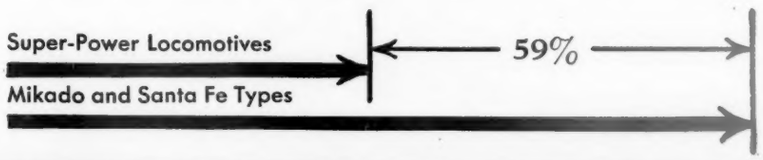
SUPER-POWER

LOCOMOTIVES CUT OPERATING COSTS

A study of actual operating data on one road showed that Super-Power Locomotives reduced operating costs 34%

Reduced Cost of Locomotive Repairs of 59%

Was Partially Responsible For This Saving



This is an indication of the reduction in repair costs which can be expected when the maintenance problem is directly considered in locomotive design.

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1932

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1931.
Akron, Canton & Youngstown	April	171	$124,465	$72	$132,439	$22,079	$17,603	$10,590	$40,689	$12,266	$101,441	76.6	$30,998	$18,730	$11,777	$35,961
	4 mos.	171	511,868	206	543,252	59,679	56,728	41,123	167,889	44,024	367,657	67.7	175,595	127,045	89,105	110,476
Alton	April	1,017	829,653	175,203	1,150,264	159,449	162,740	62,903	499,748	45,804	948,021	82.4	202,243	92,372	—66,197	160,566
	4 mos.	1,017	3,532,918	771,891	4,862,552	482,221	723,465	270,651	2,076,742	218,631	3,842,371	79.0	1,020,181	582,390	50,419	38,181
Alton & Southern	April	31	.....	.....	74,020	4,600	7,157	5,185	26,755	7,808	51,505	69.58	22,515	14,946	12,160	19,444
	4 mos.	31	.....	.....	320,558	26,103	25,565	21,371	113,887	22,004	208,930	65.17	111,628	79,699	67,406	69,083
Atchison, Topeka & Santa Fe	April	9,725	7,167,518	1,077,614	9,058,076	1,257,666	2,343,227	342,327	3,024,913	392,122	7,350,375	81.1	1,707,701	735,377	880,516	1,296,416
	4 mos.	9,723	27,689,849	4,850,240	35,872,716	4,076,255	9,652,151	1,475,295	12,816,396	1,565,583	29,556,916	82.4	6,315,800	2,442,957	2,741,155	5,961,716
Gulf, Colorado & Santa Fe	April	1,955	969,595	38,985	1,080,848	155,387	288,267	53,817	425,517	76,559	997,598	92.3	83,250	—13,844	—103,317	—197,611
	4 mos.	1,955	4,251,010	200,699	4,741,930	648,095	1,217,772	222,584	1,775,812	304,863	4,168,308	87.9	573,622	177,139	—220,251	—627,511
Panhandle & Santa Fe	April	1,878	588,610	31,990	669,124	209,269	181,728	20,163	230,083	29,773	669,412	100.0	—288	—57,126	—143,907	—180,929
	4 mos.	1,876	2,447,535	139,575	2,796,556	606,196	723,887	83,299	939,649	124,608	2,473,112	88.4	323,444	95,689	—248,657	—343,973
Atlanta & West Point	April	93	74,388	17,720	109,773	17,931	21,043	8,166	51,415	10,257	111,828	101.9	—2,055	—12,227	—22,686	6,404
	4 mos.	93	310,162	83,468	467,307	73,818	97,741	35,099	214,122	40,652	473,914	101.4	—6,607	—47,629	—88,450	—6,928
Western of Alabama	April	133	75,562	18,636	106,940	20,120	26,324	8,393	53,013	10,534	121,008	113.2	—14,068	—24,706	—20,506	23,433
	4 mos.	133	320,907	89,999	466,904	76,017	126,813	35,917	210,278	40,311	500,274	107.2	—33,370	—75,753	—55,131	58,742
Atlanta, Birmingham & Coast	April	641	197,340	5,058	227,753	51,074	57,249	22,852	97,767	16,658	253,100	111.1	—25,347	—40,775	—55,998	—68,884
	4 mos.	641	797,434	22,066	921,540	223,950	256,761	91,857	418,406	69,232	1,092,477	118.5	—170,937	—232,601	—293,455	—324,289
Atlantic Coast Line	April	5,144	3,057,017	575,755	4,016,738	543,641	754,689	131,079	1,390,336	147,888	3,003,849	74.8	1,012,889	512,629	351,666	1,150,658
	4 mos.	5,144	12,369,266	2,660,949	16,776,530	2,212,901	3,170,735	560,029	5,879,977	606,090	12,600,747	75.1	4,175,783	2,273,984	1,563,479	4,885,614
Charleston & Western Carolina	April	342	173,191	1,292	180,294	25,805	23,317	6,652	60,755	5,419	122,026	67.7	58,268	41,268	38,179	73,024
	4 mos.	342	617,647	7,118	645,438	93,992	102,778	26,922	248,221	21,478	493,325	76.4	152,113	85,089	77,489	143,616
Baltimore & Ohio	April	6,397	9,419,064	907,031	11,150,489	1,275,488	2,305,272	474,891	4,132,541	662,922	8,957,995	80.3	2,192,494	1,454,564	1,147,378	2,108,037
	4 mos.	6,397	38,088,040	3,681,185	45,038,526	4,333,014	8,890,667	1,755,300	17,368,349	2,606,249	35,379,159	78.6	9,659,367	6,584,726	5,621,581	6,668,760
Baltimore & Ohio Chic. Term	April	85	.....	.....	276,548	20,046	42,254	2,027	150,757	16,495	236,884	85.7	39,664	—5,969	70,006	151,182
	4 mos.	85	.....	.....	1,144,220	97,099	181,402	8,258	611,512	71,646	992,228	86.7	151,992	851	330,717	320,055
Staten Island Rapid Transit	April	23	51,830	94,116	152,700	8,145	12,160	1,985	79,585	14,280	116,155	76.1	36,545	18,020	6,596	23,169
	4 mos.	23	197,059	373,952	598,050	31,033	53,334	8,515	335,863	57,753	486,498	81.3	111,552	38,627	—19,275	22,708
Bangor & Aroostook	April	619	779,107	25,168	827,381	90,970	104,137	4,632	143,346	25,054	368,979	44.6	458,402	383,774	368,348	270,038
	4 mos.	619	2,695,706	119,869	2,907,747	355,248	394,504	18,283	589,318	97,146	1,458,496	50.2	1,449,251	1,201,161	1,110,300	1,112,377
Belt Ry. Co. of Chicago	April	53	.....	.....	306,446	20,275	33,251	2,978	159,372	9,137	225,013	73.4	81,433	28,644	74,814	46,912
	4 mos.	53	.....	.....	1,318,716	87,088	129,235	12,553	692,513	31,054	952,443	72.2	366,273	140,897	293,835	495,760
Bessemer & Lake Erie	April	226	269,878	1,349	277,070	39,188	130,302	12,046	112,467	42,084	336,987	121.3	—59,017	—84,467	—83,642	—155,020
	4 mos.	226	983,185	6,065	1,016,175	138,620	684,560	47,738	464,068	162,565	1,497,544	147.4	—481,369	—583,283	—555,449	702,175
Boston & Maine	April	2,092	2,696,163	638,651	3,930,287	521,231	582,410	71,922	1,487,258	188,835	2,861,704	72.8	1,068,583	826,859	655,342	906,607
	4 mos.	2,092	10,661,268	2,959,594	16,091,039	2,337,469	2,418,412	292,574	6,223,898	764,938	12,085,706	75.1	4,055,333	3,065,985	2,324,155	3,354,140
Brooklyn Eastern Dist. Term	April	11	71,900	.....	73,046	4,696	7,745	93	22,374	5,934	40,842	55.9	32,204	25,330	25,330	35,083
	4 mos.	11	295,352	.....	299,131	20,894	30,689	503	95,410	24,949	172,445	57.7	126,686	99,691	99,691	148,961
Burlington-Rock Island	April	310	56,938	822	62,700	17,828	9,469	4,718	35,321	7,881	75,217	120.0	—12,517	—19,386	—30,989	—49,333
	4 mos.	310	340,579	6,779	368,192	72,901	40,321	20,649	168,502	36,395	338,111	91.8	30,081	2,540	—54,660	—170,989
Cambria & Indiana	April	37	93,846	.....	94,040	8,162	37,147	371	11,762	7,732	65,174	69.30	28,866	17,282	73,018	63,796
	4 mos.	37	392,944	.....	393,751	26,581	157,804	1,863	48,274	31,522	266,044	67.57	127,707	79,372	305,947	352,554
Canadian Pac. Lines in Maine	April	233	124,935	16,633	155,173	37,449	26,571	5,223	64,414	4,044	137,701	88.7	17,472	6,472	—14,908	18,745
	4 mos.	233	702,272	70,979	830,252	125,806	156,714	19,934	322,763	16,238	641,455	77.2	188,797	144,797	61,961	77,534
Canadian Pacific Lines in Vermont	April	85	70,362	13,776	104,037	13,033	20,241	2,534	56,794	2,929	95,531	91.8	8,506	3,796	—18,788	—53,848
	4 mos.	85	228,519	62,670	367,451	47,298	98,431	9,065	245,180	11,907	411,881	112.1	—44,430	—63,270	—150,335	—182,207
Central of Georgia	April	1,944	896,646	100,958	1,126,259	176,362	208,160	55,507	452,082	73,054	972,356	86.3	153,903	51,957	42,053	197,626
	4 mos.	1,944	3,332,269	446,419	4,318,494	514,078	788,458	222,114	1,898,330	289,777	3,746,518	86.8	571,976	165,389	97,640	981,999
Central New Jersey	April	692	2,297,548	416,748	2,888,050	212,109	518,374	50,897	1,061,553	97,627	1,956,909	67.8	931,141	524,907	463,663	629,599
	4 mos.	692	8,466,655	1,724,711	10,886,522	837,984	2,054,114	196,777	4,408,192	402,451	7,964,796	73.2	2,921,726	1,834,864	1,564,174	1,766,841
Central Vermont	April	457	354,594	34,263	436,741	80,131	86,084	17,215	204,481	19,738	407,773	93.4	28,928	11,724	4,921	113,056
	4 mos.	457	1,363,088	188,859	1,739,346	268,962	368,413	64,969	825,858	86,337	1,615,726	92.9	123,620	53,175	18,778	350,715
Chesapeake & Ohio	April	3,144	6,965,484	223,496	7,499,907	673,250	1,392,644	155,674	1,868,591	309,878	4,418,975	58.9	3,080,932	2,295,846	2,199,957	2,211,276
	4 mos.	3,144	29,448,547	921,604	31,610,073	3,509,887	5,777,423	624,799	7,935,049	1,282,545	19,207,345	60.8	12,402,728	9,253,224	9,266,772	9,078,704
Chicago & Eastern Illinois	April	938	720,454	92,014	910,546	124,234	208,925	61,928	448,175	58,640	910,052	99.9	494	—110,013	—228,596	—106,187
	4 mos.	938	3,500,801	404,782	4,320,115	536,968	900,316	248,992	1,948,551	238,153	3,908,453	90.5	411,662	—30,449	—533,009	—616,934

Continued on next left-hand page

ACCURATE CUT-OFF CONTROL NEEDS THE POWER REVERSE GEAR

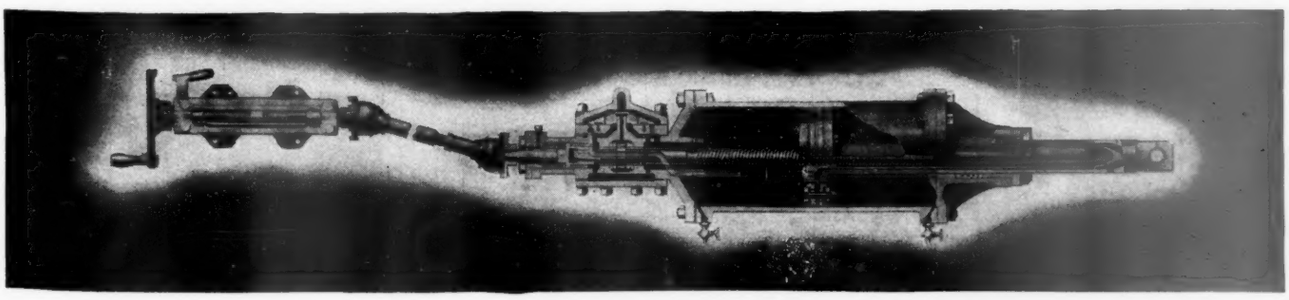
When locomotives were little, a strong engineman could change cut-off as operating conditions varied, thereby using steam efficiently.

But locomotives of 4,000 to 5,000 horsepower can't be controlled by hand. So Franklin has harnessed power to the job of changing cut-off and maintaining it at any desired point.

Accurate cut-off control is essential to the most efficient locomotive operation. You can't get it by hand but you can get it with Franklin Power Reverse Gears.

THE FRANKLIN SLEEVE JOINT
An improved flexible joint that gives long service with little attention.

They put any locomotive under the accurate control of the engineman with a resulting increase in efficiency and fuel economy. They ask little maintenance as proved by the many thousands now in service.



FRANKLIN RAILWAY SUPPLY COMPANY, INC.
NEW YORK CHICAGO MONTREAL

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1931.
Chicago & Illinois Midland	April	131	$78,306	$1,379	$85,361	$15,571	$36,292	$18,466	$43,053	$17,731	$131,089	153.6	—$45,728	—$54,463	—$68,583	$20,671
	4 mos.	131	885,486	6,690	919,097	63,972	178,204	77,358	247,247	68,753	634,558	69.0	284,539	249,685	232,420	88,514
Chicago & North Western	April	8,442	4,432,748	787,419	5,898,089	961,675	1,299,848	161,114	2,517,046	298,164	5,273,549	89.4	624,540	—58,371	—324,642	104,071
	4 mos.	8,442	18,019,698	3,486,464	24,344,488	2,612,963	5,173,903	641,715	11,015,558	1,204,004	20,798,665	85.4	3,545,823	810,257	—189,400	1,825,771
Chicago, Burlington & Quincy	April	9,260	5,248,315	542,176	6,550,714	946,007	1,108,576	222,734	2,285,735	288,649	4,900,358	74.8	1,650,356	960,209	689,833	1,531,020
	4 mos.	9,273	22,224,202	2,539,568	27,813,036	2,598,389	4,786,786	878,997	10,344,143	1,211,960	20,015,190	72.0	7,797,846	4,859,312	3,797,771	7,504,819
Chicago Great Western	April	1,491	1,168,547	54,838	1,305,890	127,528	140,619	62,322	494,891	55,035	881,960	67.5	423,930	350,144	153,658	197,597
	4 mos.	1,494	4,688,055	275,580	5,315,573	501,046	706,205	253,580	2,151,863	229,303	3,851,101	72.4	1,464,472	1,168,755	386,207	869,404
Chicago, Indianapolis & Louisville	April	644	483,358	60,636	619,978	66,243	132,898	26,121	282,462	26,767	541,612	87.4	78,366	23,213	—61,549	27,741
	4 mos.	644	2,263,723	247,077	2,834,636	268,632	586,674	109,614	1,255,278	112,106	2,362,370	83.3	472,266	228,892	—158,921	98,399
Chicago, Mil., St. Paul & Pacific	April	11,274	5,619,393	447,300	6,751,125	932,552	1,532,623	218,281	2,789,298	302,339	5,791,989	85.8	959,136	219,463	—217,374	124,954
	4 mos.	11,274	23,065,908	2,050,549	27,953,386	2,875,295	6,324,127	923,496	11,975,365	1,180,103	23,407,977	83.7	4,545,409	1,602,065	—210,198	1,830,866
Chicago River & Indiana	April	20	.....	.....	356,177	17,500	30,000	1,583	121,603	14,954	185,640	52.1	17,537	142,366	196,110	234,177
	4 mos.	20	.....	.....	1,517,280	71,500	116,000	6,453	528,083	56,003	778,039	51.3	739,241	592,625	832,228	948,375
Chicago, Rock Island & Pacific	April	7,620	4,302,368	530,741	5,400,751	465,573	1,036,853	203,865	2,275,734	287,956	4,334,374	80.3	1,066,377	561,085	200,300	779,504
	4 mos.	7,620	18,105,020	2,453,005	22,984,924	1,986,592	4,642,586	808,980	9,798,265	1,190,810	18,729,261	81.5	4,255,663	2,239,198	847,510	3,373,429
Chicago, Rock Island & Gulf	April	721	285,968	25,346	318,183	31,071	34,526	17,513	127,422	19,781	233,143	73.3	85,040	61,950	21,867	81,876
	4 mos.	721	1,306,180	116,490	1,407,795	119,679	144,232	71,148	488,326	78,598	912,586	64.8	495,209	402,882	230,780	436,601
Chicago, St. Paul, Minn. & Omaha	April	1,736	925,869	131,699	1,161,033	240,000	245,392	33,412	543,899	65,044	1,135,635	97.8	25,398	—58,067	—131,133	—781
	4 mos.	1,736	3,767,294	602,515	4,794,570	703,579	947,379	133,861	2,393,911	260,041	4,471,378	93.3	323,192	—23,699	—314,287	—71,869
Clinchfield R. R.	April	309	328,395	2,424	335,249	42,391	89,678	16,677	66,309	14,952	230,007	68.6	105,242	40,241	52,571	130,899
	4 mos.	309	1,453,809	10,539	1,486,122	178,732	375,998	68,575	300,951	58,878	983,134	66.2	502,988	242,761	291,873	608,972
Colorado & Southern	April	1,030	337,671	24,645	407,260	67,066	125,837	12,320	171,543	32,384	384,409	94.4	22,851	—47,072	—59,408	—33,471
	4 mos.	1,035	1,550,161	110,850	1,864,430	239,413	484,594	53,041	737,996	136,085	1,620,217	86.9	244,213	—32,722	—82,691	124,411
Ft. Worth & Denver City	April	694	310,928	34,100	403,807	106,926	78,120	16,279	148,057	33,120	329,985	81.7	73,822	41,405	17,346	69,473
	4 mos.	694	1,435,836	157,353	1,871,453	233,379	329,709	66,916	623,481	136,881	1,290,520	69.0	580,933	451,094	351,328	363,412
Columbus & Greenville	April	167	52,107	3,574	59,409	18,876	11,699	3,989	15,195	9,836	59,595	100.3	—186	—785	797	15,208
	4 mos.	167	234,006	23,841	274,884	68,652	49,367	14,295	103,371	46,271	282,448	102.8	—7,564	—15,492	—10,339	37,894
Conemaugh & Black Lick	April	20	14,105	.....	30,420	4,754	6,958	405	20,319	5,053	37,489	123.2	—7,069	—7,569	—6,316	—15,131
	4 mos.	20	64,017	.....	145,851	15,779	38,877	1,751	97,452	16,155	170,014	116.6	—24,163	—26,163	—21,121	—49,878
Delaware & Hudson	April	854	1,998,899	104,121	2,257,529	315,820	544,514	52,286	848,278	145,851	1,901,299	84.2	356,230	268,336	274,581	341,341
	4 mos.	854	7,143,022	473,036	8,192,470	1,264,981	2,177,781	206,705	3,455,120	589,834	7,691,729	93.9	500,741	144,058	149,200	797,714
Delaware, Lackawanna & Western	April	998	3,240,033	609,065	4,432,186	500,550	761,271	129,264	1,766,742	159,869	3,347,304	75.5	1,084,882	629,136	614,976	882,451
	4 mos.	998	11,768,119	2,619,272	16,722,097	1,549,700	3,016,455	493,350	7,180,010	635,198	12,996,348	77.7	3,725,749	1,999,464	1,998,160	2,587,933
Denver & Rio Grande Western	April	2,556	980,274	73,968	1,145,131	155,760	325,397	49,099	413,573	79,697	1,029,787	89.9	115,344	—50,841	—29,275	249,389
	4 mos.	2,556	4,532,623	318,826	5,215,500	630,333	1,416,104	194,155	1,897,281	330,424	4,493,383	86.2	722,117	60,512	155,986	1,290,327
Denver & Salt Lake	April	232	54,235	7,733	73,054	20,911	23,519	1,579	19,228	10,330	75,167	102.9	—2,113	—19,115	—17,213	3,796
	4 mos.	232	560,250	30,202	635,635	79,395	113,577	7,334	112,716	41,882	354,158	55.7	281,477	213,386	231,891	137,266
Detroit & Mackinac	April	242	39,427	2,862	48,346	9,966	11,023	1,429	24,203	4,101	50,714	104.9	—2,368	—9,595	—10,109	28,464
	4 mos.	242	160,778	12,962	197,186	31,597	41,218	5,837	95,573	16,013	190,225	96.5	6,961	—22,092	—24,599	28,108
Detroit & Toledo Shore Line	April	50	186,446	.....	187,922	27,909	25,468	7,187	54,131	6,678	121,373	64.6	66,549	50,505	11,230	34,753
	4 mos.	50	953,336	.....	961,057	89,701	100,658	29,409	234,966	27,975	482,119	50.2	478,938	384,672	200,540	229,561
Detroit Terminal	April	19	.....	.....	51,785	6,796	6,805	39	30,999	3,100	47,739	92.2	4,046	—6,667	—14,251	—1,028
	4 mos.	19	.....	.....	267,565	27,997	32,339	39	138,146	12,856	211,377	79.0	56,188	8,099	—21,724	9,059
Detroit, Toledo & Ironton	April	487	365,197	344	373,292	52,323	70,156	11,978	120,765	22,142	276,608	74.1	96,684	50,963	42,645	92,378
	4 mos.	487	1,480,035	2,145	1,522,671	170,317	284,543	47,543	533,498	94,468	1,129,518	74.2	393,153	207,520	157,555	629,010
Duluth, Missabe & Northern	April	563	56,845	1,256	73,788	87,676	165,047	3,763	114,244	42,157	412,887	559.6	—339,099	—345,479	—345,683	—693,172
	4 mos.	563	244,187	6,378	317,126	351,938	720,512	13,720	517,389	162,109	1,765,627	556.8	—1,448,501	—1,481,151	—1,483,803	—2,577,092
Duluth, Winnipeg & Pacific	April	178	63,956	1,541	70,324	21,922	19,627	3,124	34,286	6,770	86,154	122.5	—15,830	—19,346	—898	—22,494
	4 mos.	178	308,138	10,436	333,409	67,360	82,361	13,013	162,044	25,306	351,800	105.5	—18,391	—35,223	38,430	—52,538
Elgin, Joliet & Eastern	April	447	584,690	1	639,703	66,009	161,978	13,399	302,507	57,588	601,460	94.0	38,243	—77,307	—105,083	141,918
	4 mos.	447	2,928,006	21	3,170,631	372,562	691,451	55,914	1,412,542	229,656	2,761,937	87.1	408,694	—53,500	—217,939	397,007
Erie Railroad	April	2,046	4,628,756	492,529	5,593,009	646,887	1,206,179	146,233	2,083,889	255,861	4,365,611	78.1	1,227,398	835,142	696,363	860,801
	4 mos.	2,046	18,112,908	2,031,320	22,053,759	2,237,513	4,754,747	595,399	8,545,129	1,046,821	17,270,529	78.3	4,783,230	3,174,305	2,715,040	4,056,405
Chicago & Erie	April	269	648,904	20,195	710,907	106,530	112,456	24,277	210,571	36,078	489,896	68.9	221,011	171,410	—28,936	89,106
	4 mos.	269	2,669,587	97,247	2,957,842	360,310	450,949	100,377	889,292	141,792	1,942,614	65.7	1,015,228	795,182	18,180	277,665

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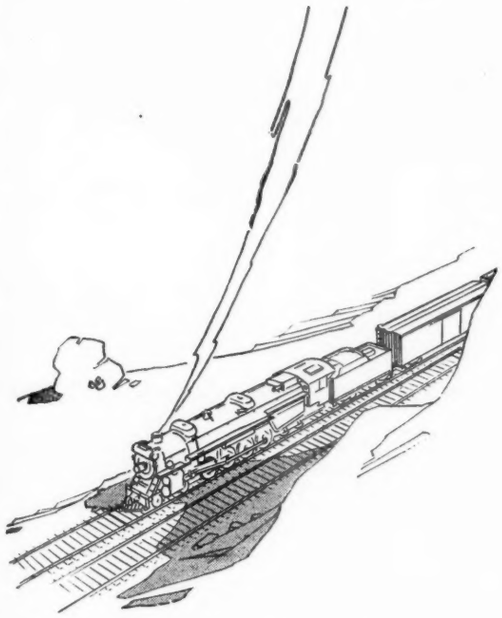
THERE'S MORE TO SECURITY ARCHES THAN JUST BRICK

Locomotives

Are Asking A Lot From Arches



BOILER horsepower is being stepped up continually. Speeds have risen and runs have lengthened.

As a result, the firebox is worked far harder than formerly and the locomotive Arch is called upon to withstand far more severe service.

Everything considered, Arch Brick render better service today than they ever did—a tribute to the constant efforts of the American Arch Company in developing the locomotive Arch.

HARBISON-WALKER REFRACTORIES CO.
Refractory Specialists

AMERICAN ARCH CO.
INCORPORATED
Locomotive Combustion Specialists

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1931.
New Jersey & New York	April	45	$21,456	$72,978	$96,913	$8,846	$24,799	$1,538	$50,372	$3,442	$88,997	91.8	$7,916	$2,916	—$17,149	—$18,651
	4 mos.	45	73,623	294,024	378,274	33,499	99,964	6,116	205,288	14,576	359,444	95.0	18,830	—2,008	—82,843	—57,526
N. Y., Susquehanna & Western	April	131	274,203	29,251	321,551	20,735	50,491	4,946	117,226	11,014	204,407	63.6	117,144	85,001	71,507	60,360
	4 mos.	131	981,254	119,997	1,189,384	120,496	197,399	19,319	488,682	47,049	872,936	73.4	316,448	187,235	108,382	291,760
Florida East Coast	April	864	458,053	179,660	731,397	116,972	141,903	23,268	198,473	42,208	528,689	72.3	202,708	102,602	43,996	173,670
	4 mos.	864	2,148,608	1,008,850	3,618,123	447,839	543,987	99,962	868,655	170,361	2,175,122	60.1	1,443,001	1,042,593	815,084	1,080,156
Fort Smith & Western	April	249	43,080	960	47,809	12,897	10,777	4,769	22,074	5,233	55,759	116.6	—7,950	—10,965	—16,534	—14,783
	4 mos.	249	197,681	5,675	221,124	50,904	45,491	18,597	96,318	19,233	230,460	104.2	—9,336	—21,407	—35,404	—27,211
Galveston Wharf	April	11	.....	.....	163,731	41,778	4,746	4,081	22,666	5,891	94,905	58.0	68,826	45,780	45,698	17,270
	4 mos.	11	.....	.....	669,856	183,945	20,107	14,455	92,624	26,589	401,874	60.0	247,982	175,895	175,778	69,697
Georgia R. R.	April	329	224,672	17,356	266,516	35,222	35,870	18,116	118,162	17,730	225,302	84.5	41,214	33,591	46,778	77,371
	4 mos.	329	830,568	71,340	990,361	130,017	192,152	77,007	493,209	74,605	968,141	97.8	22,220	—8,600	38,058	196,774
Georgia & Florida	April	463	70,756	1,295	77,142	22,527	15,550	8,632	32,557	6,509	85,832	111.3	—8,690	—15,390	—16,256	1,592
	4 mos.	463	274,440	5,434	300,514	84,158	64,145	34,872	137,867	26,686	348,341	115.9	—47,827	—74,640	—84,307	—29,685
Grand Trunk Western	April	1,021	1,079,881	63,676	1,246,127	166,269	272,372	47,043	614,689	91,682	1,200,746	96.4	45,381	—43,350	—157,358	3,476
	4 mos.	1,021	4,575,031	287,839	5,280,355	655,845	1,125,271	195,828	2,612,413	362,305	4,988,664	94.5	291,691	—151,521	—571,281	—258,535
Canadian Nat. Lines in New Eng.	April	172	89,294	13,889	118,596	16,410	23,169	3,641	58,707	7,585	116,801	98.5	1,795	—12,335	—54,436	—97,778
	4 mos.	172	315,390	38,405	411,699	79,829	87,726	15,282	266,031	36,715	504,155	122.4	—92,456	—148,976	—324,720	—367,156
Great Northern	April	8,336	3,475,206	282,770	4,194,930	654,784	1,029,105	200,504	1,611,578	195,748	3,731,026	88.9	463,904	—155,504	—287,046	90,898
	4 mos.	8,338	13,045,896	1,326,009	16,234,773	1,975,972	4,180,868	748,305	7,135,421	794,690	14,962,693	92.2	1,272,080	—949,148	—1,611,979	927,634
Green Bay & Western	April	234	92,796	1,354	96,930	16,440	18,440	5,453	40,134	2,543	82,964	85.5	13,966	6,966	5,085	1,507
	4 mos.	234	367,541	5,726	382,524	72,265	67,752	16,260	178,951	11,639	346,406	90.5	36,118	8,115	2,962	10,117
Gulf & Ship Island	April	307	83,650	9,284	107,522	8,364	15,634	2,990	55,168	9,777	92,247	85.8	15,275	—1,825	—13,366	—34,894
	4 mos.	307	302,100	44,181	397,361	42,023	58,580	14,872	215,402	30,629	364,231	91.7	33,130	—35,294	—77,632	—206,633
Gulf, Mobile & Northern	April	733	284,538	7,532	307,980	34,115	54,064	21,548	102,045	16,938	228,710	74.26	79,270	56,270	40,057	40,434
	4 mos.	733	983,903	42,674	1,094,697	167,470	226,700	92,836	422,461	74,923	984,390	89.92	110,307	18,159	—52,312	27,201
Illinois Central	April	5,018	4,726,043	698,413	6,237,020	434,106	1,304,229	192,170	2,421,079	324,453	4,722,116	75.7	1,514,904	935,323	772,709	954,573
	4 mos.	5,018	21,029,733	3,171,159	26,655,940	1,772,876	5,378,657	826,948	10,464,600	1,289,586	19,918,444	74.7	6,737,496	4,478,486	4,075,754	2,521,519
Yazoo & Mississippi Valley	April	1,673	783,426	73,898	938,880	85,413	128,746	32,898	430,750	55,884	736,790	78.5	202,090	66,027	—50,863	—234,453
	4 mos.	1,679	3,367,080	342,374	4,024,563	336,854	593,451	133,266	1,847,225	222,100	3,146,393	78.2	878,170	332,428	—44,338	—704,546
Illinois Central System	April	6,692	5,509,469	772,311	7,175,900	519,519	1,432,975	225,068	2,851,829	380,337	5,458,906	76.1	1,716,994	1,001,350	721,846	720,120
	4 mos.	6,698	24,396,813	3,513,533	30,680,503	2,109,730	5,972,108	960,214	12,311,825	1,511,686	23,064,837	75.2	7,615,666	4,810,914	4,031,416	1,816,973
Illinois Terminal	April	543	304,919	56,406	379,928	55,632	48,323	14,990	137,424	21,254	277,385	73.01	102,543	71,943	46,604	127,179
	4 mos.	543	1,318,679	245,892	1,645,333	201,368	212,890	65,210	620,119	103,143	1,200,942	72.99	444,391	321,991	212,112	442,627
Kansas City Southern	April	783	607,908	23,915	746,551	81,672	137,618	43,289	231,734	62,642	559,615	75.0	186,936	98,762	75,090	134,934
	4 mos.	783	2,569,524	104,728	3,083,911	295,588	524,986	182,454	1,013,176	267,529	2,294,036	74.4	789,875	436,937	354,107	936,289
Texarkana & Ft. Smith	April	99	78,109	1,574	87,780	13,053	9,175	6,338	28,637	9,124	67,791	77.2	19,989	11,670	—6,192	42,334
	4 mos.	99	320,868	6,671	365,633	54,725	33,820	25,432	122,987	34,992	277,679	75.9	87,954	52,511	—20,182	88,584
Kansas, Oklahoma & Gulf	April	326	150,967	409	153,828	19,246	13,738	9,636	39,545	7,902	90,022	58.5	63,806	48,419	32,776	29,392
	4 mos.	326	615,243	1,937	628,473	61,987	60,777	40,937	159,122	34,339	357,101	56.8	271,372	199,176	140,465	188,228
Lake Superior & Ishpeming	April	160	24,251	138	26,154	16,442	14,562	615	15,944	5,551	53,114	203.1	—26,960	—41,957	—42,981	—40,465
	4 mos.	160	100,532	483	107,990	60,900	61,598	2,311	68,438	23,849	217,096	201.0	—109,106	—169,094	—173,683	—210,836
Lake Terminal	April	12	.....	.....	18,926	2,297	3,266	.....	12,624	1,940	20,127	106.3	—1,201	—4,780	—4,585	—8,811
	4 mos.	12	.....	.....	78,767	7,946	14,764	.....	56,162	8,186	87,058	110.5	—8,291	—22,609	—23,481	—38,064
Lehigh & Hudson River	April	96	144,720	388	154,333	15,295	23,244	3,411	49,470	8,452	99,872	64.7	54,461	39,516	24,001	40,401
	4 mos.	96	533,145	1,891	572,006	82,942	94,569	13,253	204,319	34,761	429,844	75.1	142,162	91,763	33,861	78,848
Lehigh & New England	April	216	348,647	509	352,316	55,467	65,913	4,889	103,744	20,144	250,156	71.0	102,160	86,818	96,153	102,798
	4 mos.	216	1,188,732	2,091	1,203,231	141,988	252,708	20,045	406,856	77,933	899,489	74.8	303,742	254,428	300,430	306,763
Lehigh Valley	April	1,361	3,261,510	224,440	3,818,478	240,179	762,154	119,068	1,461,925	125,403	2,726,369	71.4	1,092,109	824,776	719,604	642,958
	4 mos.	1,361	11,755,718	1,038,268	14,030,820	888,277	3,146,646	474,034	6,099,788	511,446	11,189,853	79.8	2,840,967	1,772,117	1,362,160	1,871,983
Louisiana & Arkansas	April	608	301,576	8,112	335,095	60,557	58,994	23,034	89,487	20,715	252,658	75.4	82,437	39,523	52,661	88,488
	4 mos.	608	1,277,148	33,833	1,422,619	235,973	230,123	89,987	390,900	87,924	1,032,316	72.6	390,303	218,441	217,778	271,255
Louisiana, Arkansas & Texas	April	202	38,589	220	43,797	12,157	6,475	3,551	17,590	4,615	44,387	101.4	—590	—3,597	—7,785	—15,882
	4 mos.	202	172,089	1,646	191,422	52,081	27,978	13,439	74,571	17,156	185,070	96.7	6,352	—5,754	—24,791	—34,450
Louisville & Nashville	April	5,263	4,129,733	434,208	5,054,273	922,640	1,193,672	183,876	2,027,526	312,089	4,671,213	92.4	383,060	—84,152	—121,500	694,563
	4 mos.	5,263	18,449,766	1,923,872	22,241,466	3,703,179	4,995,969	767,544	8,657,446	1,235,068	19,481,935	87.6	2,759,531	930,248	1,025,742	2,933,944

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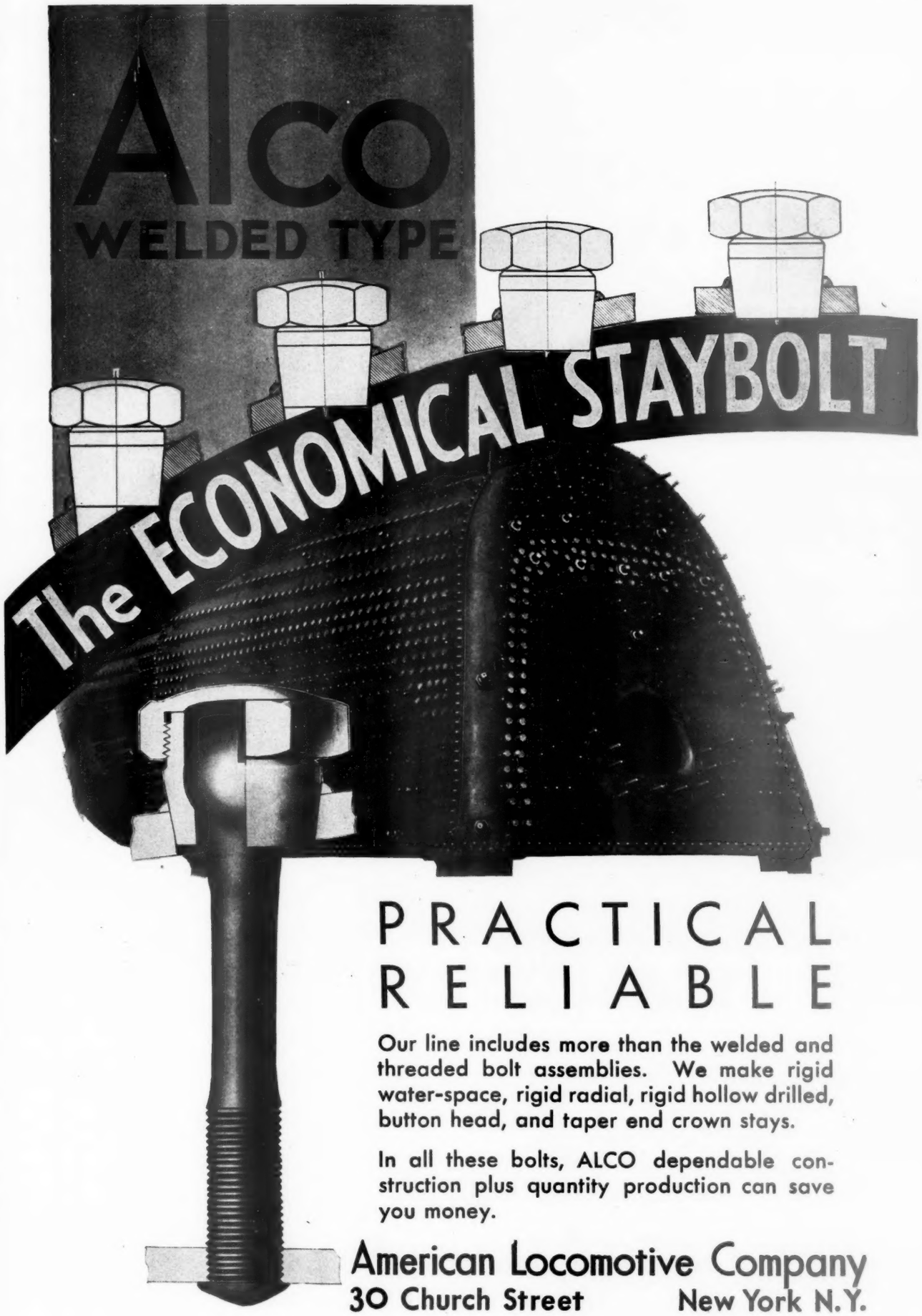

PRACTICAL RELIABLE

Our line includes more than the welded and threaded bolt assemblies. We make rigid water-space, rigid radial, rigid hollow drilled, button head, and taper end crown stays.

In all these bolts, ALCO dependable construction plus quantity production can save you money.

American Locomotive Company
30 Church Street New York N.Y.

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1931.
Maine Central	April	1,121	$818,595	$99,427	$1,014,584	$169,610	$172,147	$21,258	$385,740	$41,599	$790,343	77.9	$224,241	$170,879	$120,120	$195,837
	4 mos.	1,121	3,158,502	428,226	3,972,405	624,872	677,211	71,005	1,645,336	178,106	3,196,372	80.5	776,033	548,103	380,695	646,381
Midland Valley	April	363	134,967	559	139,038	19,372	18,247	3,914	33,157	8,628	81,365	58.5	57,673	47,371	40,042	19,052
	4 mos.	363	522,473	3,080	541,560	70,173	68,298	17,153	141,742	33,290	328,440	60.6	213,120	166,927	134,568	114,589
Minneapolis & St. Louis	April	1,627	569,772	18,317	630,056	96,797	132,550	32,165	317,458	43,703	622,944	98.9	7,112	—38,473	—61,163	25,715
	4 mos.	1,627	2,286,336	100,674	2,565,428	287,793	550,861	130,585	1,348,726	166,899	2,484,758	96.9	80,670	—96,181	—186,805	—32,493
Minn., St. Paul & S. S. Marie	April	4,349	1,632,014	103,809	1,894,851	257,564	447,833	66,053	808,904	113,346	1,695,732	89.5	199,119	55,498	—88,534	—27,481
	4 mos.	4,349	5,767,881	448,525	6,835,001	975,822	1,805,953	264,843	3,410,149	439,646	6,909,433	101.1	—74,432	—806,748	—1,307,859	—379,383
Duluth, South Shore & Atlantic	April	560	110,876	13,724	138,984	20,967	31,489	6,640	76,721	8,830	145,884	105.0	—6,900	—33,200	—37,133	6,266
	4 mos.	560	436,046	63,534	557,922	98,128	137,216	26,971	313,145	36,170	617,142	110.6	—59,220	—171,820	—183,857	9,690
Spokane International	April	163	36,127	2,798	43,118	14,027	4,604	2,840	21,236	4,737	48,001	111.3	—4,883	—9,922	—12,290	144
	4 mos.	163	147,700	11,462	175,968	63,473	19,768	11,833	92,858	19,753	210,009	119.3	—34,041	—54,197	—66,566	—2,243
Mississippi Central	April	150	49,758	1,165	52,908	10,440	12,137	7,584	18,439	5,329	53,929	101.9	—1,021	—4,742	—7,763	1,612
	4 mos.	150	201,427	5,091	214,942	43,007	58,818	32,547	79,044	23,275	236,691	110.1	—21,749	—36,685	—51,774	16,069
Missouri & North Arkansas	April	364	58,827	1,289	65,000	16,914	13,128	8,032	29,953	8,118	76,059	117.0	—11,059	—13,459	—21,529	14,918
	4 mos.	364	281,253	5,214	307,301	64,371	51,128	33,584	132,230	32,975	313,390	102.0	—6,089	—15,988	—51,227	—13,345
Missouri-Illinois	April	202	69,703	488	71,796	12,465	12,434	3,177	24,875	5,594	58,552	81.6	13,244	7,949	285	17,437
	4 mos.	202	292,576	2,092	301,408	47,198	52,681	15,049	101,297	23,455	239,676	79.5	61,732	40,353	6,452	30,980
Missouri-Kansas-Texas Lines	April	3,188	1,791,679	182,430	2,212,509	284,084	309,694	113,923	772,522	135,725	1,631,832	73.8	580,677	364,352	196,120	131,788
	4 mos.	3,188	7,231,373	782,167	8,966,880	1,089,589	1,417,083	470,422	3,261,250	564,922	6,865,704	76.6	2,101,176	1,262,216	630,079	908,270
Missouri Pacific	April	7,436	4,717,466	371,627	5,636,112	620,145	962,970	245,756	2,218,109	283,924	4,359,717	77.4	1,276,395	853,561	527,618	1,455,924
	4 mos.	7,436	19,973,376	1,698,369	23,874,120	2,492,165	4,251,127	997,517	9,633,017	1,194,263	18,680,592	78.3	5,193,528	3,549,306	2,305,628	5,616,223
Gulf Coast Lines	April	1,030	775,609	36,004	853,853	86,901	130,286	36,805	219,911	49,305	520,939	61.01	332,914	285,249	200,192	358,605
	4 mos.	1,030	3,186,759	177,785	3,549,013	394,954	561,246	155,882	923,356	194,515	2,230,283	62.84	1,318,730	1,125,687	738,717	839,455
International-Great Northern	April	1,159	730,480	58,136	874,063	105,931	161,417	32,177	374,121	54,593	736,980	84.32	137,083	95,931	6,075	254,064
	4 mos.	1,159	2,903,643	269,719	3,545,768	512,286	689,238	130,878	1,560,071	221,053	3,150,187	88.84	395,581	224,295	—132,686	691,742
San Antonio, Uvalde & Gulf	April	316	82,322	6,048	94,738	16,678	14,105	4,696	21,617	5,770	62,851	66.3	31,887	27,268	—2,870	—8,190
	4 mos.	316	377,063	25,195	427,738	81,003	55,611	19,929	103,240	22,662	281,278	65.8	146,460	127,967	14,553	64,178
Mobile & Ohio	April	1,239	687,142	20,863	758,391	105,484	122,010	45,587	308,602	39,041	621,213	81.9	137,178	77,147	8,633	101,187
	4 mos.	1,196	2,490,656	94,440	2,758,527	407,551	514,003	181,626	1,221,665	164,170	2,486,514	90.1	272,013	32,836	—198,974	135,718
Monongahela	April	177	346,771	1,104	349,629	32,000	30,000	1,131	68,433	8,288	139,852	40.0	209,777	189,751	120,341	103,444
	4 mos.	177	1,313,301	5,064	1,325,772	147,000	145,000	4,919	299,919	34,057	630,895	47.6	694,877	634,389	346,844	389,030
Monongahela Connecting	April	6	0	0	48,590	8,101	21,578	50	27,219	2,749	59,697	122.9	—11,107	—16,510	—16,635	7,726
	4 mos.	6	0	0	189,051	31,996	91,355	600	120,576	10,614	255,141	135.0	—66,090	—87,240	—87,727	—6,571
Montour	April	57	129,300	.....	129,834	10,400	35,881	1,469	31,442	7,353	86,545	66.7	43,289	41,245	58,422	40,891
	4 mos.	57	522,163	.....	523,534	42,410	146,119	5,855	132,172	28,275	354,831	67.8	168,703	160,528	225,763	245,466
Nashville, Chatt. & St. Louis	April	1,203	813,903	76,753	986,673	161,980	243,488	61,415	404,849	57,485	932,404	94.5	54,269	10,756	—3,517	188,818
	4 mos.	1,203	3,298,689	345,293	4,090,725	636,012	947,483	253,050	1,698,222	239,655	3,794,177	92.8	296,548	124,163	86,706	446,729
Nevada Northern	April	165	21,544	2,139	27,737	9,621	5,227	819	9,153	3,979	28,799	103.8	—1,062	—8,971	—4,777	9,224
	4 mos.	165	86,147	10,372	115,324	38,340	20,230	3,209	40,679	14,912	117,370	101.8	—2,046	—34,449	—20,653	19,283
Newburgh & South Shore	April	6	.....	.....	55,905	9,300	17,823	.....	27,941	5,648	60,712	108.6	—4,807	—16,296	—12,463	2,508
	4 mos.	6	.....	.....	228,528	28,600	74,697	.....	118,803	23,390	245,490	107.4	—16,962	—62,920	—48,344	—76,619
New Orleans Great Northern	April	264	133,507	6,766	145,564	13,983	16,912	12,860	45,531	7,962	97,248	66.8	48,316	37,623	13,915	27,804
	4 mos.	264	535,506	30,534	586,459	57,014	71,743	50,039	195,373	32,632	406,801	69.4	179,658	137,505	41,964	100,685
New Orleans Terminal	April	20	2,630	.....	106,829	12,530	7,867	.....	37,290	1,242	58,929	55.2	47,900	36,334	15,485	31,145
	4 mos.	20	5,816	.....	440,383	50,566	30,653	.....	133,703	5,180	220,120	50.0	220,281	174,010	110,091	28,999
New York Central	April	11,517	16,653,496	4,730,240	24,837,712	2,810,174	5,951,638	629,873	9,644,942	1,123,252	20,528,692	82.7	4,309,020	1,693,277	363,974	2,801,601
	4 mos.	11,484	70,018,644	22,230,774	106,171,265	10,925,677	22,217,631	2,507,209	40,813,080	4,694,811	82,744,085	77.9	23,427,180	12,652,587	7,520,136	10,138,900
Indiana Harbor Belt	April	120	.....	.....	612,193	68,000	67,000	4,353	240,091	20,683	414,834	67.8	197,359	156,269	99,370	128,664
	4 mos.	119	.....	.....	2,590,723	272,000	268,000	17,146	1,067,076	89,497	1,790,282	69.1	800,441	634,617	439,826	514,371
Pittsburgh & Lake Erie	April	235	1,004,667	58,623	1,091,297	84,297	355,348	29,347	420,744	66,642	958,291	87.8	133,006	41,337	163,060	392,631
	4 mos.	235	3,975,409	270,763	4,372,802	365,371	1,449,510	115,414	1,742,218	263,722	3,943,542	90.2	429,260	71,033	584,197	1,367,088
New York, Chicago & St. Louis	April	1,698	2,358,291	84,255	2,534,528	390,798	467,658	113,345	924,653	149,441	2,047,531	80.8	486,997	315,000	94,394	478,619
	4 mos.	1,698	9,688,523	321,071	10,404,888	1,309,159	1,796,839	452,924	3,976,524	526,053	8,044,331	77.3	2,360,557	1,562,640	585,509	1,285,124

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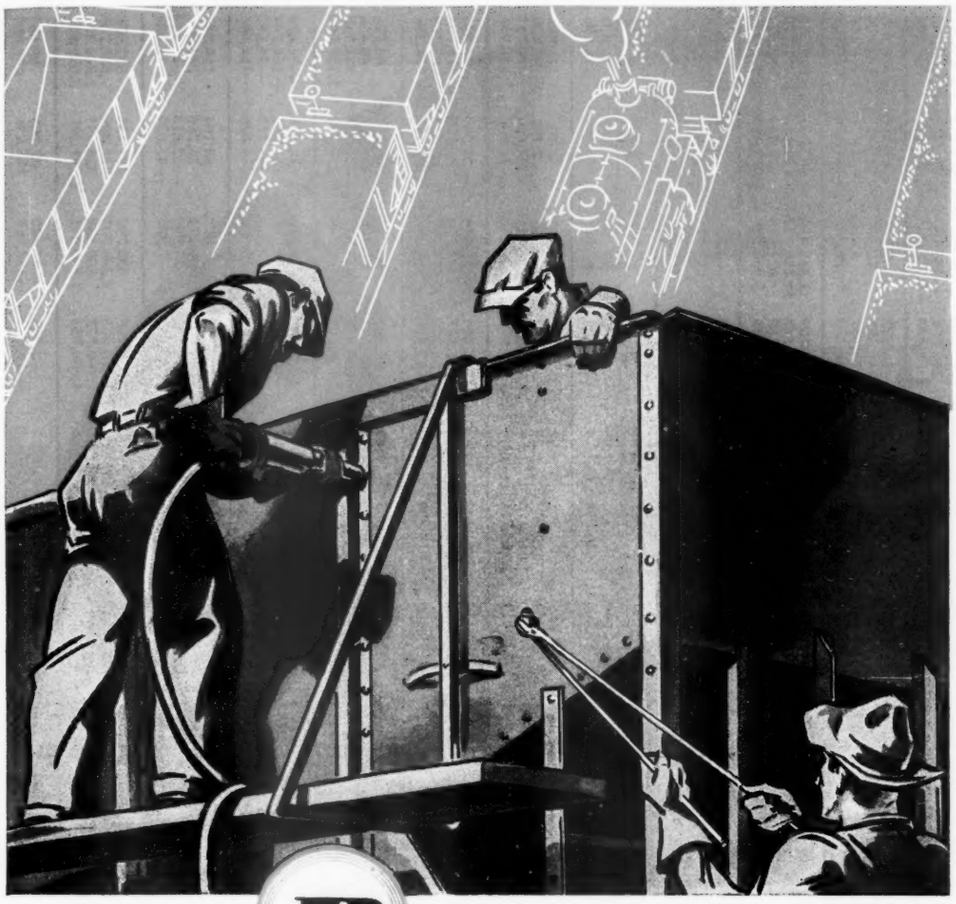

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CENTRAL ALLOY DIVISION

REPUBLIC STEEL CORPORATION

HEADQUARTERS: YOUNGSTOWN, OHIO

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1931.
N. Y., New Haven & Hartford	April	2,083	$3,789,160	$2,128,479	$6,707,192	$883,638	$951,601	$86,087	$2,322,621	$244,513	$4,624,585	68.9	$2,082,607	$1,632,090	$1,157,440	$1,825,576
	4 mos.	2,082	15,220,781	9,136,577	27,681,779	3,244,303	4,130,918	338,462	9,792,790	1,033,454	19,106,382	69.0	8,575,397	6,624,360	4,594,813	6,234,109
New York Connecting	April	20	179,191	.....	190,416	10,127	6,935	.....	30,922	1,248	49,232	25.9	141,184	105,184	62,680	61,926
	4 mos.	20	762,936	.....	797,794	46,450	9,845	.....	122,954	4,419	183,668	23.0	614,126	470,126	311,964	271,912
New York, Ontario & Western	April	568	840,984	16,952	967,869	105,138	153,435	13,237	343,921	25,193	641,711	66.3	326,158	281,109	226,489	72,548
	4 mos.	568	2,988,204	75,216	3,570,371	317,927	581,879	54,460	1,380,596	103,278	2,458,510	68.9	1,111,861	931,759	675,044	352,861
Norfolk & Western	April	2,268	4,398,297	130,765	4,721,523	571,517	825,832	110,222	1,301,203	251,389	3,073,838	65.1	1,647,685	1,072,515	1,174,677	1,428,564
	4 mos.	2,268	19,199,547	590,580	20,595,295	2,457,548	4,521,147	457,028	5,685,043	1,028,690	14,226,066	69.1	6,369,229	3,917,722	4,266,245	6,190,876
Norfolk Southern	April	932	372,551	7,762	400,595	76,803	71,911	21,507	162,562	20,782	353,565	88.3	47,030	3,616	—9,519	57,487
	4 mos.	932	1,272,468	32,582	1,386,177	288,451	261,726	85,225	654,986	84,150	1,374,518	99.2	11,659	—161,891	—202,146	39,047
Northern Pacific	April	6,735	3,138,802	273,560	3,805,917	648,492	894,794	177,917	1,514,377	271,820	3,563,341	93.6	242,576	—368,843	—106,383	3,248
	4 mos.	6,735	11,550,587	1,202,385	14,315,051	1,835,649	4,061,776	665,015	6,528,744	1,121,089	14,393,544	100.6	—78,493	—2,522,409	—1,480,625	391,096
Northwestern Pacific	April	441	125,430	87,978	244,191	48,603	50,032	7,455	138,955	15,387	260,418	106.6	—16,227	—47,246	—60,113	—88,300
	4 mos.	441	476,994	345,042	936,058	219,351	206,177	19,642	575,782	64,213	1,084,639	115.9	—148,581	—272,159	—313,455	—444,614
Oklahoma City-Ada-Atoka	April	132	31,952	279	33,892	7,117	1,613	963	12,037	1,682	23,405	69.1	10,487	6,026	—1,479	—4,186
	4 mos.	132	130,163	2,027	140,359	30,340	9,402	4,256	50,513	7,722	102,187	72.8	38,172	20,232	—11,076	—10,452
Pennsylvania R. R.	April	10,897	20,564,346	5,304,703	29,328,474	2,518,059	5,867,047	652,971	10,543,979	1,440,420	21,342,371	72.8	7,986,103	5,361,457	4,392,806	4,784,312
	4 mos.	10,897	84,197,919	22,668,950	119,931,417	10,643,704	25,121,656	2,675,743	45,925,027	6,068,884	91,946,173	76.7	27,985,244	19,118,922	15,628,640	15,111,129
Long Island	April	404	685,861	1,569,028	2,404,950	Cr. 12,259	363,463	12,121	1,200,105	56,174	1,619,187	67.3	785,763	613,129	420,824	582,574
	4 mos.	404	2,541,526	6,278,637	9,341,954	718,319	1,519,175	53,787	4,408,552	233,201	6,931,273	74.2	2,410,681	1,917,759	1,202,406	1,803,467
Peoria & Pekin Union	April	17	8,243	Dr. 1	66,758	6,092	7,022	1,828	33,867	6,703	55,512	83.2	11,246	—5,020	15,478	2,703
	4 mos.	17	32,261	Dr. 3	301,588	25,763	31,163	8,021	148,763	28,366	242,076	80.3	59,512	—5,687	71,253	103,298
Pere Marquette	April	2,266	1,586,135	62,642	1,758,670	268,586	417,246	63,807	760,648	107,976	1,624,809	92.4	133,861	32,695	—71,340	263,333
	4 mos.	2,266	Cr.855,688	289,207	7,590,536	1,039,158	1,658,520	247,107	3,153,493	424,336	6,549,482	86.3	1,041,054	468,608	183,274	495,081
Pittsburg & Shawmut	April	102	58,841	761	60,316	9,616	19,531	1,591	16,513	4,130	51,381	85.2	8,935	7,847	8,544	18,713
	4 mos.	102	241,580	3,360	247,396	42,597	87,439	6,758	69,480	17,523	223,797	90.5	23,599	19,306	23,069	47,635
Pittsburgh & West Virginia	April	138	178,619	100	195,274	17,855	55,332	15,057	38,445	15,242	149,474	76.5	45,800	19,293	38,540	81,626
	4 mos.	138	719,312	472	787,018	71,539	231,635	61,531	164,185	59,280	616,914	78.4	170,104	63,627	128,165	286,092
Pittsburg, Shawmut & Northern	April	197	84,758	272	87,728	17,218	24,370	2,175	32,149	6,485	82,397	92.8	5,331	2,863	—900	19,508
	4 mos.	197	339,324	1,190	352,350	62,711	84,977	6,960	137,594	27,360	319,602	90.7	32,748	22,850	7,127	87,420
Reading	April	1,460	4,229,634	295,047	4,898,404	525,348	1,100,219	73,126	1,911,872	188,709	3,818,170	77.9	1,080,234	967,735	922,609	460,113
	4 mos.	1,460	16,487,254	1,285,946	19,275,769	1,967,538	4,587,908	314,012	7,966,889	785,911	15,706,754	81.5	3,569,015	3,003,851	2,843,490	2,137,019
Atlantic City	April	163	77,474	40,992	128,292	29,122	16,295	2,478	112,897	3,178	164,145	127.9	—35,853	—75,813	—78,369	—96,527
	4 mos.	163	309,999	154,845	500,977	119,001	65,153	10,866	472,817	14,174	682,865	136.3	—181,838	—341,728	—356,578	—475,503
Richmond, Frederick. & Potomac	April	117	348,446	157,082	627,292	61,702	123,028	9,505	230,616	31,902	470,416	75.0	156,876	119,375	68,156	185,169
	4 mos.	117	1,426,812	727,339	2,680,074	238,656	541,424	37,254	1,011,887	132,800	2,018,898	75.3	661,176	516,263	287,497	738,296
Rutland	April	413	226,644	37,412	334,665	50,075	60,617	11,370	132,403	14,589	269,363	80.5	65,302	43,774	46,391	60,776
	4 mos.	413	796,709	182,855	1,316,533	218,530	260,965	43,965	571,254	58,192	1,150,986	87.4	165,547	78,489	93,578	40,428
St. Louis-San Francisco	April	5,266	2,914,750	265,387	3,475,971	460,625	743,761	100,269	1,184,195	170,987	2,669,343	76.8	806,628	464,941	441,734	981,712
	4 mos.	5,266	11,346,283	1,134,120	13,694,254	1,883,087	3,090,995	417,816	5,078,108	706,548	11,237,965	82.1	2,456,289	1,100,346	920,994	3,359,008
Ft. Worth & Rio Grande	April	233	31,791	1,412	38,785	15,376	13,516	2,713	24,459	4,131	60,195	155.2	—21,410	—26,216	—34,358	—36,476
	4 mos.	233	110,238	7,052	141,316	69,814	49,336	10,974	101,844	15,136	246,948	174.7	—105,632	—124,100	—153,261	—154,744
St. Louis, San Francisco & Texas	April	262	65,125	260	70,162	21,612	16,029	4,444	34,610	7,329	84,019	119.8	—13,857	—18,421	—45,118	—44,592
	4 mos.	262	284,738	2,941	305,068	85,254	75,683	22,019	169,255	30,761	382,937	125.5	—77,869	—95,983	—214,826	—162,085
St. Louis Southwestern Lines	April	1,913	1,002,888	15,208	1,090,961	130,475	166,472	84,494	371,699	82,071	842,038	77.2	248,923	158,474	64,104	159,080
	4 mos.	1,913	3,948,644	77,660	4,320,458	595,621	731,690	327,206	1,578,899	311,910	3,581,497	82.9	738,961	409,271	23,266	201,339
San Diego & Arizona	April	155	13,364	219	15,379	16,679	8,026	2,139	10,919	4,037	42,910	279.0	—27,531	—31,990	—32,613	—11,944
	4 mos.	155	111,872	22,422	143,746	43,203	41,551	9,282	60,008	17,922	173,748	120.9	—30,002	—47,922	—47,073	11,325
Seaboard Air Line	April	4,449	2,646,704	211,743	3,170,283	446,584	580,968	148,109	1,076,742	152,527	2,433,715	76.8	736,568	490,742	381,356	523,078
	4 mos.	4,453	10,078,744	1,181,404	12,523,819	1,873,292	2,365,424	630,566	4,563,046	626,173	10,211,364	81.5	2,312,455	1,346,705	852,296	1,802,708
Southern Ry.	April	6,724	5,210,878	669,570	6,454,699	976,065	1,478,081	171,630	2,426,348	296,789	5,394,127	83.6	1,060,572	509,988	325,345	1,044,370
	4 mos.	6,724	21,039,738	2,885,379	26,189,627	3,930,073	5,959,718	702,125	10,161,766	1,184,325	22,122,974	84.5	4,066,653	1,846,455	1,191,278	2,609,950
Alabama Great Southern	April	315	285,801	39,512	355,934	72,683	114,765	11,263	138,567	19,743	359,930	101.1	—3,966	—42,932	—47,308	69,652
	4 mos.	315	1,146,106	166,895	1,442,891	290,395	458,524	47,580	575,576	75,937	1,461,890	101.3	—18,999	—173,955	—173,636	102,588

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THE BEST PROOF

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HUNT-SPILLER GUN IRON

Air Furnace

Revenues and Expenses of Railways

MONTH OF APRIL AND FOUR MONTHS OF CALENDAR YEAR 1932—CONTINUED

Name of road		Av. mileage operated during period.	Operating revenues: Freight.	Passenger.	Total (inc. misc.)	Operating expenses: Maintenance of Way and structures.	Maintenance of Equipment.	Traffic.	Transportation.	General.	Total.	Operating ratio.	Net from railway operation.	Operating income (or loss).	Net ry. operating income.	Net ry. operating income, 1931.
Cinn., New Orleans & Tex. Pac.	April	337	$759,046	$62,147	$881,277	$133,417	$240,805	$26,943	$259,265	$47,578	$712,985	80.9	$168,292	$109,013	$103,425	$114,792
	4 mos.	337	3,116,677	299,198	3,656,653	572,278	995,572	105,341	1,098,691	188,344	2,982,804	81.6	673,849	450,258	470,984	462,020
Georgia Southern & Florida	April	397	119,581	22,191	156,429	35,080	46,977	2,154	56,472	2,811	146,054	93.4	10,375	—6,766	—9,554	1,832
	4 mos.	397	519,318	122,198	708,895	151,980	188,405	7,719	260,659	9,514	631,187	89.0	77,708	6,519	27,330	91,998
New Orleans & Northeastern	April	204	139,565	23,026	177,467	30,740	46,908	7,069	68,801	13,708	169,170	95.3	8,297	—22,722	—34,483	—42,018
	4 mos.	204	600,302	92,755	750,731	142,461	199,921	28,053	293,873	46,930	718,914	95.8	31,817	—92,227	—134,174	—175,676
Northern Alabama	April	99	40,850	3,250	45,772	9,404	1,347	1,286	15,815	2,229	30,081	65.7	15,691	10,599	—3,653	3,512
	4 mos.	100	171,694	5,575	183,690	46,902	5,977	4,984	63,738	9,686	131,285	71.5	52,405	32,009	—24,540	—28,101
Southern Pacific	April	9,102	6,453,503	1,469,777	8,792,787	1,105,835	1,671,295	300,438	3,277,147	570,638	7,099,143	80.7	1,693,644	630,843	273,334	975,620
	4 mos.	9,107	25,117,232	6,581,400	35,152,514	4,311,763	6,906,921	1,175,718	13,644,055	2,254,499	29,081,867	82.7	6,070,647	1,710,943	392,286	3,324,116
So. Pacific Steamship Lines	April	....	311,103	20,497	342,598	16,314	68,914	17,851	288,922	28,742	420,743	122.8	—78,145	—83,618	—83,750	—111,237
	4 mos.	....	1,345,939	84,486	1,511,928	66,397	474,975	70,760	1,220,959	112,314	1,945,405	128.7	—433,477	—442,196	—442,124	—434,020
Texas & New Orleans	April	4,625	2,091,190	247,348	2,658,530	462,395	555,743	137,713	998,161	228,593	2,399,055	90.2	259,475	—16,619	—197,425	—546
	4 mos.	4,627	8,426,413	1,157,333	10,903,098	1,893,254	2,327,458	529,951	4,207,525	921,949	9,941,854	91.2	961,244	—142,411	—865,408	102,001
Spokane, Portland & Seattle	April	555	289,898	27,815	356,444	48,098	66,393	10,726	145,297	20,844	291,827	81.9	64,617	—14,702	—17,774	99,179
	4 mos.	555	1,198,654	127,829	1,494,371	187,414	265,092	42,402	595,300	87,900	1,181,785	79.1	312,586	—4,737	—27,410	192,425
Tennessee Central	April	295	143,520	4,047	155,610	27,872	25,713	7,586	59,624	12,179	132,685	85.3	22,925	18,855	6,715	35,320
	4 mos.	295	617,983	17,739	670,644	109,725	95,721	30,043	261,650	49,494	545,649	81.4	124,995	106,786	56,960	62,905
Terminal R. R. Assn. of St. L.	April	55	.....	.....	464,030	62,477	32,611	3,836	232,175	21,149	354,775	76.5	109,255	22,507	87,577	163,807
	4 mos.	55	.....	.....	2,012,927	248,145	132,375	16,145	1,025,405	79,944	1,512,752	75.2	500,175	152,324	422,416	545,093
Texas & Pacific	April	1,950	1,365,190	194,110	1,760,231	185,414	336,351	69,586	574,701	114,264	1,297,736	73.7	462,495	344,987	219,931	653,306
	4 mos.	1,950	5,389,122	827,020	7,041,029	725,791	1,325,690	291,759	2,395,520	450,451	5,254,176	74.6	1,786,853	1,315,941	823,794	1,870,261
Texas-Mexican	April	162	87,341	644	93,331	8,178	11,555	3,228	21,327	6,670	50,923	54.6	42,408	37,152	34,679	5,858
	4 mos.	162	212,315	3,034	238,778	38,862	41,580	12,308	73,720	26,638	193,044	80.8	45,734	24,727	13,990	—26,337
Toledo, Peoria & Western	April	239	107,985	35	108,946	25,612	10,586	12,299	35,751	8,730	92,978	85.3	15,968	13,107	4,543	15,387
	4 mos.	239	426,276	228	434,383	97,522	38,142	49,213	155,532	31,088	371,497	85.5	62,886	51,934	20,596	60,734
Toledo Terminal	April	28	.....	.....	63,292	11,156	12,836	553	29,218	5,413	59,176	93.5	4,116	—7,206	6,738	31,570
	4 mos.	28	.....	.....	288,556	25,784	49,614	2,097	129,081	18,938	225,514	78.2	63,042	17,222	78,819	148,805
Union R. R. of Penna.	April	45	.....	.....	168,860	54,915	85,855	160	98,525	13,248	252,703	149.7	—83,843	—91,343	—64,486	—24,403
	4 mos.	45	.....	.....	784,379	175,838	394,416	571	460,006	55,053	1,085,884	138.4	—301,505	—331,505	—224,367	—110,876
Union Pacific	April	3,768	4,042,542	479,286	5,044,506	489,060	1,038,099	143,070	1,619,529	300,551	3,664,586	72.6	1,379,920	876,163	668,334	819,835
	4 mos.	3,768	16,091,953	2,014,123	20,255,532	1,364,738	4,226,009	532,721	6,914,808	1,246,233	14,595,769	72.1	5,659,763	3,666,945	3,090,896	4,040,223
Oregon Short Line	April	2,506	1,352,189	104,427	1,568,262	238,904	220,815	41,922	539,324	104,811	1,164,754	74.3	403,508	150,289	56,483	138,434
	4 mos.	2,506	5,719,421	502,581	6,772,575	726,464	1,005,736	175,844	2,393,199	447,960	4,885,750	72.1	1,886,825	873,289	540,928	1,026,254
Oregon-Wash. R. R. & Nav. Co.	April	2,338	864,012	82,331	1,074,501	213,837	170,898	62,701	484,961	99,285	1,039,665	96.8	34,836	—124,873	—235,465	—375,674
	4 mos.	2,338	3,562,389	390,484	4,475,038	654,409	693,116	240,590	2,099,622	410,712	4,134,013	92.4	341,025	—298,189	—710,474	—879,960
Los Angeles & Salt Lake	April	1,249	951,792	142,814	1,215,025	141,214	189,562	55,971	393,294	67,690	880,040	72.4	334,985	188,230	55,218	67,728
	4 mos.	1,249	4,162,764	578,007	5,194,792	516,513	797,893	223,915	1,765,389	285,370	3,726,795	71.7	1,467,997	879,032	357,028	—35,998
St. Joseph & Grand Island	April	258	173,407	2,303	184,344	27,546	22,739	2,464	61,471	14,431	128,651	69.8	55,693	41,826	29,111	35,404
	4 mos.	258	705,336	13,502	754,783	82,870	95,349	10,192	258,782	58,993	506,186	67.1	248,597	191,835	129,628	181,110
Utah	April	111	61,065	.....	61,127	10,207	21,230	397	14,026	4,744	50,604	82.8	10,523	8,587	—2,163	3,260
	4 mos.	111	461,392	.....	463,537	53,431	110,197	1,603	106,929	20,518	292,678	63.1	170,859	131,935	78,445	72,372
Virginian	April	608	897,380	5,794	953,003	108,632	210,268	17,573	212,587	29,282	577,733	60.6	375,270	240,270	314,340	412,385
	4 mos.	608	4,416,191	31,437	4,682,243	446,582	885,330	64,937	936,374	116,518	2,448,850	52.3	2,233,393	1,618,368	1,878,833	1,893,517
Wabash	April	2,523	2,702,094	204,623	3,149,616	555,894	574,990	152,215	1,328,456	167,259	2,790,705	88.6	358,911	148,773	—230,566	294,637
	4 mos.	2,523	11,051,570	885,793	12,921,068	1,800,345	2,264,373	643,957	5,779,775	701,081	11,245,266	87.0	1,675,802	835,647	—575,694	902,416
Ann Arbor	April	293	272,590	3,291	282,699	36,575	56,059	12,544	120,585	11,581	237,368	84.0	45,331	29,495	11,179	36,203
	4 mos.	293	1,088,844	13,872	1,133,137	138,287	205,179	52,772	498,592	46,832	941,804	83.1	191,333	110,205	34,278	86,540
Western Maryland	April	891	984,421	6,040	1,062,873	143,274	211,689	42,179	295,118	41,984	724,361	68.2	338,512	268,512	264,708	346,487
	4 mos.	891	4,225,862	28,204	4,515,065	662,902	830,457	164,845	1,218,321	168,564	3,027,652	67.1	1,487,413	1,207,413	1,186,917	1,517,335
Western Pacific	April	1,051	726,948	34,805	828,903	118,064	171,347	58,870	348,983	38,221	768,807	92.8	60,096	—28,132	—32,511	—189,246
	4 mos.	1,051	2,808,281	131,765	3,140,724	447,539	715,379	239,958	1,555,604	160,385	3,205,411	102.1	—64,687	—436,490	—424,168	—425,645
Wheeling & Lake Erie	April	511	508,350	3,686	543,819	98,589	180,471	30,103	215,915	26,693	551,771	101.5	—7,952	—80,129	—99,901	103,291
	4 mos.	511	2,630,441	17,155	2,794,049	355,479	747,990	128,007	971,311	118,200	2,320,987	83.1	473,062	136,538	65,807	330,225
Wichita Falls & Southern	April	203	40,245	36	42,077	10,230	8,221	1,702	12,277	2,884	35,314	83.93	6,763	2,591	—376	—1,166
	4 mos.	203	183,418	218	190,146	38,619	30,682	7,426	54,134	11,828	142,689	75.04	47,457	30,779	16,015	—14,933